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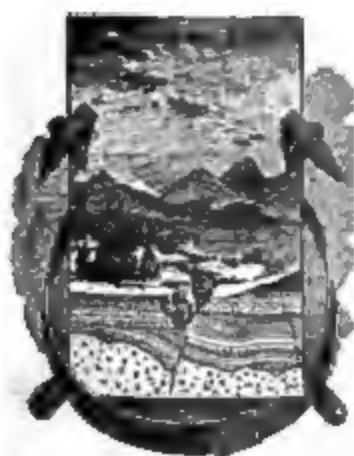
DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY  
CHARLES D. WALCOTT, DIRECTOR

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THE  
TIN DEPOSITS OF THE YORK REGION, ALASKA

BY

ARTHUR J. COLLIER



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904

УВАЖАЈИ ОБОЖАТЕ

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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 2, 1904.*

SIR: I have the honor to transmit herewith a report entitled "The Tin Deposits of the York Region, Alaska," by Mr. Arthur J. Collier, and to recommend its publication as a bulletin.

Placer tin was discovered in this region in 1900, and since that time active prospecting has been going on to determine the extent and distribution of the stream tin, and also to locate its source in bed rock. Though the occurrence of tin-bearing lodes had been previously reported, the first authentic discovery of this kind was made by Mr. Collier during the last season, and this find has awakened great interest in the district. The demand for authentic information regarding these occurrences has led to the preparation of this report, which is based on a very hasty field examination. The aim has been to summarize all the information in regard to the occurrence of tin which might be of value to the prospector, and for this reason a brief description of the better known tin deposits of the world has been included. The publication of the geologic results of these investigations is deferred until a more complete study of the notes and specimens has been made.

Very respectfully,

ALFRED H. BROOKS,  
*Geologist in Charge of Division Alaskan Mineral Resources.*

HON. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*









# THE TIN DEPOSITS OF THE YORK REGION, ALASKA.

By ARTHUR J. COLLIER.

## INTRODUCTION.

The known occurrences of tin in Alaska are close to the westernmost point of the American continent, in the York region of Seward Peninsula, the land mass which projects from the west coast of Alaska to within 60 miles of the coast of Asia. The peninsula as a whole has become famous in recent years on account of its gold placers, and every summer it is the objective point of a fleet of vessels loaded with prospectors following the ice pack in its northward retreat. The city of Nome, its most important mining camp, is the metropolis of Alaska. North of Seward Peninsula the Arctic Ocean stretches away toward the pole, while on the south Bering Sea, icebound for half the year, extends for 700 miles to the open water of the Pacific Ocean.

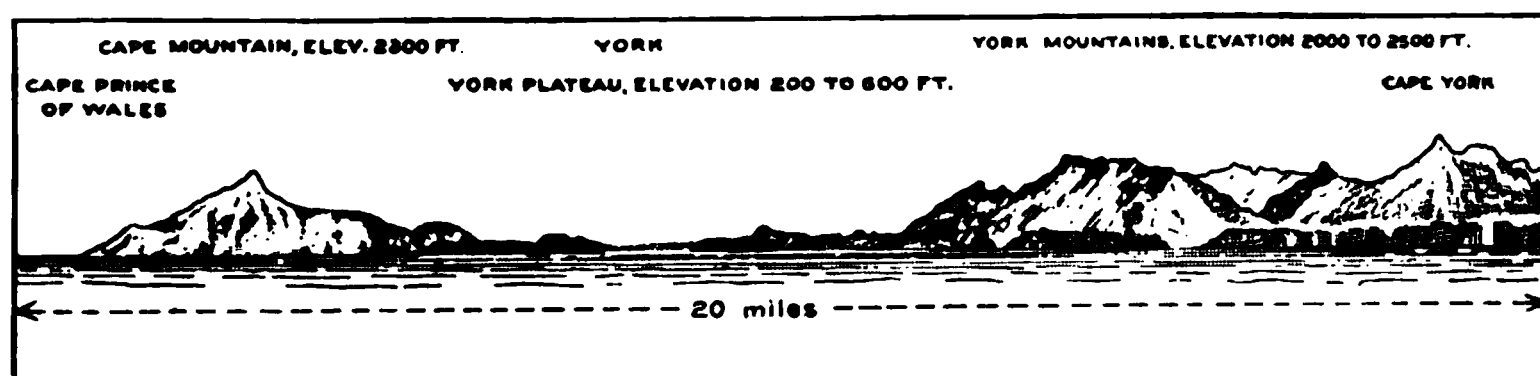


FIG. 1.—Sketch of the coast from Cape York to Cape Prince of Wales.

*Geographic position of the York region.*—The York region, which derives its name from Cape York, an ill-defined promontory on Bering Sea, about 100 miles northwest of Nome, comprises that portion of the peninsula west of the entrance to Port Clarence, thus including Cape Prince of Wales, the westernmost point of the American continent. Its general geographic position is shown in the outline map, Pl. I.

Reference to the topographic map, Pl. II, will show that the region has the general form of an isosceles triangle, with its apex at Cape Prince of Wales and its two sides formed by the shore lines of the Arctic Ocean and of Bering Sea. The southern coast line is, in the main, inhospitable and unbroken by inlets or harbors. The land usually presents abrupt escarpments rising from narrow rocky beaches and giving it a forbidding character, well shown by the sketch reproduced

in fig. 1. On the north the slopes toward the Arctic Ocean are more gentle, and the coast is characterized by barrier beaches that cut off broad lagoons from the open sea. Such a one is Lopp Lagoon, a large body of water that is unfortunately too shallow for any but light-draft boats. The large bay known as Port Clarence, 20 miles southeast of York, is the only good harbor in the region.

The York Mountains occupy the southeastern part of the triangle and culminate in Brooks Mountain, 2,900 feet in altitude, the highest point in this part of the peninsula. These mountains have rugged crest lines, their continuity being broken by several broad streams and river valleys, but when seen from a distance their summits have an even sky line from 2,000 to 2,900 feet above the sea. To the north and west of this mountain group stretches the so-called York Plateau, a comparatively smooth upland surface 200 to 600 feet above sea level that comprises the greater part of the region under discussion. The smaller streams crossing this plateau flow in sharply cut V-shaped canyons, while the larger streams occupy comparatively broad valleys containing large accumulations of gravel. On the south the plateau presents an escarpment to Bering Sea, but on the north it slopes gently downward to a coastal plain dotted with lakes, through which the rivers and streams meander to the Arctic Ocean.

The drainage of the region runs either northward or southward, but the watershed lies much nearer Bering Sea than the Arctic Ocean.

*History of recent exploration and development.*—The chief settlement of the region is York, a collection of cabins and tents on the open coast of Bering Sea at the mouth of Anikovik River, about 10 miles east of Cape Prince of Wales and 5 miles west of Cape York.

Previous to the discovery of gold at Cape Nome very little was known regarding the York region. A mission had been established for a number of years at Cape Prince of Wales, where one of the Government reindeer herds was maintained. After the first rush to Nome prospectors rapidly extended their search to all parts of the peninsula, and as early as the fall of 1899 some placer gold had been found in the Anikovik River Basin.<sup>a</sup>

In 1900, A. H. Brooks, of the United States Geological Survey, during his investigation of the southern part of the Seward Peninsula, spent several days in the York region and brought from the placers of Anikovik River and Buhner Creek, one of its tributaries, some concentrates, which proved to contain stream tin.<sup>b</sup>

In July, 1901, the writer spent a number of days in the York district,

<sup>a</sup> Schrader, F. C., and Brooks, A. H., Preliminary report on Cape Nome gold region, Alaska: Special report on Alaska, U. S. Geol. Survey, 1900, pp. 25-26.

<sup>b</sup> Brooks, A. H., An occurrence of stream tin in the York region, Alaska: Mineral Resources U. S. for 1900. U. S. Geol. Survey, 1901, pp. 267-271. A new occurrence of cassiterite in Alaska: Science, new ser., vol. 13, No. 328, 1901, p. 593. A reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Alaska, in 1900; special report on Alaska, U. S. Geol. Survey, 1901, pp. 132-139.



before the news of the discovery had been disseminated among the miners, and it was possible only to verify the facts regarding tin ore reported by Mr. Brooks. A reconnaissance geologic map of the region was prepared and published in the report of the season's work, together with some suggestions in regard to the possible occurrence of tin ore.<sup>a</sup> In the latter part of the season, a great many prospectors searched the York region for tin, and before winter they had located promising deposits of stream tin on Buck Creek, a tributary of Mint River, about 20 miles north of the town of York.

In 1902 the search was continued and the first real attempts to mine the tin-bearing gravels were made on Buck Creek. The nature of this occurrence and the mining conditions which existed there at that time have been described by Mr. Rickard.<sup>b</sup>

In 1903 the writer was detailed to continue investigations of the mineral resources of the Seward Peninsula, and Mr. F. L. Hess was assigned to his party as field assistant. The party also included two experienced camp hands, and was equipped for traveling inland with a pack train of five animals. Nearly all the important placer mining camps of the peninsula were examined during the course of the work. Though a visit to the York region had not been contemplated, it was found upon arrival in the field that the interest in the tin deposits at York had not subsided, and that developments since 1901 justified further investigations, though there was little time available for this purpose. The party reached Teller in the latter part of July and there met a number of prospectors who had been searching for tin in the York region, and who desired to have their specimens examined, since they were unable to identify tin ore. Among these specimens only one piece of tin ore was found, but it had been obtained in a new locality and consisted of cassiterite crystals still in the matrix, indicating that its original source might easily be found.

On the following day Mr. Hess and the writer, accompanied by two prospectors, started from Teller in a small sailboat en route to the scene of the tin prospecting operations in the York region. During the following week Lost River, Buck Creek, and Cape Mountain were visited and the tin deposits at these places were examined. This work had to be done with such haste as to make the results in many respects unsatisfactory, since the work in other districts comprehended in the writer's instructions was sufficient to consume the whole season. The examination of the Lost River locality was made by Mr. Hess and the writer jointly, while Buck Creek was visited by Mr. Hess and Cape Mountain was visited by the writer.

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<sup>a</sup> Collier, A. J., Reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 49.

<sup>b</sup> Rickard, Edgar, Tin deposits of the York region, Alaska: Eng. and Min. Jour., vol. 75, 1903, pp. 30-31.

*Purpose of this bulletin.*—It is the purpose of this bulletin to combine the results obtained by the United States Geological Survey parties that have visited the region, together with the information derived from a study of specimens of tin ores and associated minerals recently brought from the York region by outside parties, and to present such facts in regard to the occurrences and value of the metal as may be of assistance to those interested in the development of the field. Throughout the field and office work the writer has had the efficient aid of Mr. Hess, who has devoted special attention to the compilation of the literature referring to tin deposits. The work of Mr. Eugene C. Sullivan, chemist of the Survey, who elaborated a method of analyses by which minute traces of tin could be detected, and who also made assays of the material from the York region, has added greatly to the value of the report.

### GENERAL GEOLOGY.

The geology of the York region, as has been shown, has been subject to investigations during the years 1900, 1901, and 1903, but all of this work was of a reconnaissance character, and the results have not yet been correlated with the latest work in other parts of the peninsula; hence it has been thought best to defer their publication for the present.

A sketch map (fig. 2) is here introduced to show the relative distribution of the more prominent rock types, without attempting, however, to subdivide them into formations or to indicate their stratigraphic and structural relations. In this map the horizontal distribution of four different rock types is indicated. These include slates and limestones, probably of Paleozoic age, and some granular intrusives, chiefly of a siliceous character. The slates and limestones form belts of irregular outline extending north and south, while the igneous rocks are found in intrusive stocks and dikes, the former outcropping in more or less circular areas. Besides these hard rocks, Pleistocene and Recent sands and gravels form the surface deposits of the northern coastal plain, and are also found in the valleys of many of the streams.

### SEDIMENTARY ROCKS.

It is seen in fig. 2 that the larger part of the area surrounding the York Mountains is occupied by limestone. This limestone has an ash-gray color and exhibits little evidence of metamorphism. It is characterized by low dips and comparatively simple structure. This formation has been called the Port Clarence limestone,<sup>a</sup> and has been definitely traced over an area of about 1,400 square miles, extending

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<sup>a</sup> Collier, A. J., Reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 18.



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eastward from Cape York. The Port Clarence limestone is known to be of upper Silurian age, and it is safe to presume that a large part of the sedimentary rocks of the York region are also upper Silurian.

The continuity of this limestone is interrupted by several small

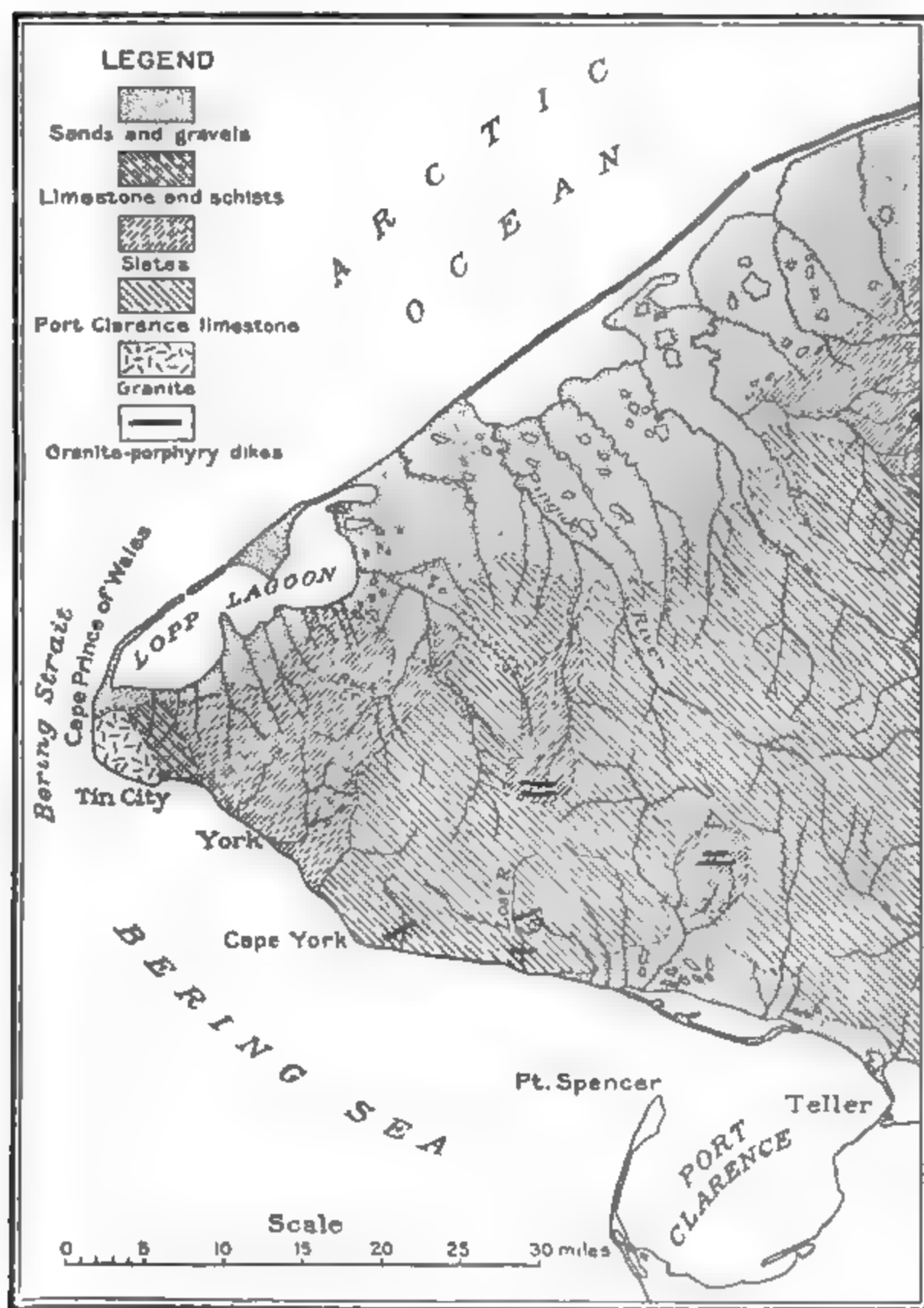


FIG. 2.—Geological sketch map of the York region.

slate areas of irregular outline, and a large belt of these rocks lies to the west of the York Mountains, forming the mass from which the greater part of the York Plateau is cut. These rocks, often so altered that they might more properly be called schists, are of a graphitic,



arenaceous, and sometimes calcareous character, and are of very fine texture. They are much jointed and broken by lines of cleavage into rhombohedral blocks and pencil-shaped fragments. The bedding is often obscured and sometimes obliterated by the highly developed joint structures. The age of these slates has not been determined. In 1900 they were correlated by Brooks<sup>a</sup> with the so-called Kuzitrin slates, which outcrop along the northern base of the Kigluaik Mountains. The work of the writer in 1901 pointed to the conclusion that they are older than the Port Clarence limestone, but this fact has not yet been definitely established. There is some indication of faulting along the contact of this slate belt and the limestones to the southeast.

West of the slates there is a narrow belt of highly altered limestone or marble more or less interbedded with micaceous schists. This belt, about 4 miles in width, lies between the slates on the east and a large mass of granite on the west, the latter forming the peak known as Cape Mountain. Some obscure fossils collected during the past season indicate that these limestones are either of Devonian or Carboniferous age. The stratigraphic relations of this limestone to the slates on the east have not been definitely determined.

#### SURFICIAL DEPOSITS.

The unconsolidated gravels and silts form the youngest group of sediments of the region. On the sketch map these deposits are shown mantling an area bordering the Arctic coast. This is the western end of a very extensive gravel deposit which covers the low Arctic coastal plain of Seward Peninsula from Cape Espenberg to Cape Prince of Wales.<sup>b</sup> These deposits extend to the base of the hills and in the valleys merge with the stream gravels with which they probably have common origin. In the southern part of the York region these surficial deposits are confined to the creek beds and narrow strips along the coast, and are usually too small to be shown on the map. All of these gravels are water-laid deposits, there being no evidence of glaciation. They form a part of the great Quaternary mantle that is so extensively developed in Seward Peninsula and adjacent portions of Alaska. The gravels, which are of economic interest because they locally contain concentrations of stream tin, will be described in another part of this paper.

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<sup>a</sup> Brooks, A. H., Richardson, G. B., and Collier, A. J., A reconnaissance of the Cape Nome and adjacent gold fields of Seward Peninsula, Alaska, in 1900: Special report on Alaska, U. S. Geol. Survey, 1901, p. 133.

<sup>b</sup> Collier, A. J., Reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 25.

## IGNEOUS ROCKS.

Two distinct types of igneous rocks are present, one of which is basic while the other is acidic. The first group includes basic dikes and sills, all more or less altered and sometimes schistose, which may be grouped together under the general name of greenstones. The greenstones and greenstone-schists include a number of more or less altered intrusive masses, and occur most frequently in the slates near the contact with the limestone which forms the York Mountains. Boulders of this rock are widely distributed in the gravels of the region. Under the microscope they appear, for the most part, to be altered gabbros. They are often called granite by the miners, but can readily be distinguished from the true granite by a general green color and the absence of quartz. This distinction is of importance, for, so far as known, no tin deposits have been found in association with the greenstone.

The second group consists of more acid rocks and includes a number of large masses of granite together with dikes of a fine-grained, porphyritic rock containing prominent quartz crystals. These dikes often form a fringe surrounding the larger granite masses, of which they are probably offshoots. Granite masses of the same type occur in occasional outcrops from Cape Prince of Wales northeastward for over 100 miles, and form a zone which also finds a western extension in the Diomed Islands and possibly in the granites on the Siberian coast.

In the York region these rocks find their greatest development in Cape Mountain, where a great stock of granite is intruded into the limestone. The Cape Mountain granite is coarsely crystalline, somewhat porphyritic, and consists essentially of quartz, microcline, and biotite, but contains as accessory minerals, albite, muscovite, zircon, apatite, tourmaline, pyrite, and fluorite.

At Brooks Mountain, which is largely made up of slates, a number of dikes of granitic and rhyolitic rocks were observed, but these have not yet been studied microscopically. A few miles to the south, near Lost River, a number of granite and rhyolite intrusions in the limestone have been examined and will be described in some detail in connection with the Lost River tin deposits. The granites of this region, and especially those at Lost River, have been considerably altered and have taken various forms to which the name "greisen" has been applied because of their similarity to the vein rocks of the tin deposits of Cornwall and Saxony. The typical greisen of Saxony is a granite made up of quartz and lepidolite, or lithia mica, with fluorite, tourmaline, topaz, and cassiterite in small amounts.

The distribution of the granite intrusives is of the greatest economic importance, since many of the known lode deposits of tin occur in granite dikes. The prospectors of the region have readily recognized this and have made careful search along these contacts.

## ECONOMIC GEOLOGY.

### GENERAL STATEMENT.

Tin is known to be irregularly distributed in the York region over an area of about 450 square miles, embracing the western end of the peninsula. Its occurrence in alluvial deposits has been verified by the United States Geological Survey at three localities, and the existence of tin-bearing lodes has been observed at two points. The extreme points known are 25 miles apart. In addition to these, prospectors report the occurrence of tin at a great many other places, either in lode or placer form, and though it has not been possible to confirm these reports, there is reason to believe that they indicate a more extensive distribution of the tin ores. Many of the reported discoveries lie beyond the limits of the York region and indicate that the tin districts extend 100 miles or more to the northeast.

The tin ore is almost all cassiterite (tin oxide), though some stannite (sulphide of tin, copper, and iron) has been found. In the bed rock two essentially different types of deposits are represented. The ore occurs in veins cutting phyllites or metamorphic slates, and is disseminated through more or less altered granitic dikes. The lode deposits of the latter type give promise of commercial importance. Lode deposits of the former type have not been discovered in place, but the occurrence of tin-bearing quartz veins in slates is inferred from the distribution of the placer tin and from pebbles of slate containing small tin-bearing quartz veins, which have been observed in the gravels. It should be noted that no granite has been found in the slate area, and there is no positive evidence that the tin there has any genetic relation to granite intrusives.

No discussion of the genesis of these various ore bodies will be presented in this report, since the fieldwork has all been of a reconnaissance character. From a comparison of the evidence at hand with the facts known with regard to the older tin-bearing districts, it seems to be at least possible that the tin lodes of both types are connected with intrusive granite bodies, some of which have been exposed by erosion, while others are still deeply buried. These granites, which probably were all intruded at about the same time, mark a zone of plutonic activity extending from the Diomed Islands northeastward, parallel with the Arctic coast, for 100 miles or more. The localities from which tin ore has actually been obtained by United States Geological Survey parties and which have been examined in some detail will be described under the headings "Lost River," "Cape Mountain," "Buck Creek," "Buhner Creek," and "Anikovich River." The streams from which placer tin is reported by prospectors will be mentioned under the heading "Reported occurrences of stream tin," and

the localities from which prospectors have reported "ledge tin" will be described under the headings "Brooks Mountain," "Ear Mountain," "Hot Springs," "Asses Ears," and two other localities worthy of investigation will be mentioned under the headings "Diomed Islands" and "Don River."

#### LOCALITIES WHERE LODE TIN HAS BEEN FOUND.

##### LOST RIVER.

Lost River enters Bering Sea at a point about 15 miles southeast of York, 25 miles west of Teller, a town on Port Clarence, and 10 miles northwest of Point Spencer, at the entrance to Port Clarence. A view of the valley of this river, taken from the coast, is shown on Pl. III. The river has a length of about 10 miles and drains the central part of the York Mountains. The mountains constitute a nearly circular area of rugged land forms, about 15 miles in diameter. The summits rise to a general level of about 2,500 feet, and, as noted, reach a culmination of 2,900 feet in Brooks Mountain, near the north side of the area, which is the highest point in the northern part of Seward Peninsula. Along the southern edge of this mountain mass there is a well-defined bench from one-half mile to 4 miles wide. This bench was cut from the rocks by wave action and then raised, but so unequally that at the mouth of Lost River it has an elevation of 600 feet, while eastward it gradually declines until at Port Clarence it is practically at sea level.

The writer has referred to this feature in a previous paper as the Cape York bench.<sup>a</sup> It was produced during the same period of erosion as the York Plateau.

On the seaward side the Cape York bench is bounded by steep bluffs, which at places front directly on Bering Sea (see fig. 1) and at other points rise from a lower and younger bench nearly at sea level. This lower and newer plane is well developed from the mouth of Lost River eastward to Port Clarence, and has a width varying from one-half mile to 3 or 4 miles. It is, in part, a rock bench similar to the Cape York bench, and, in part, a gravel-built coastal plane. Immediately north of Port Clarence the lower coastal plane is fringed by a wide lagoon, cut off from Port Clarence by a sand spit.

The York Mountains are generally devoid of the tundra vegetation which covers so much of the Seward Peninsula; and along Lost River, from the coast to the tin deposits, can be found an exceptionally good roadbed for this part of Alaska. For one traveling on foot it is as firm as an ordinary macadamized road, and owing to the ease with which the trip up the river is made the distances are likely to be underestimated by persons who have traveled in other parts of Seward

<sup>a</sup> Collier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 37.

Peninsula. Lost River forks about  $1\frac{1}{2}$  miles from the coast, one branch continuing in a nearly due north direction, while the other drains a country to the west that has not been examined by geologists.

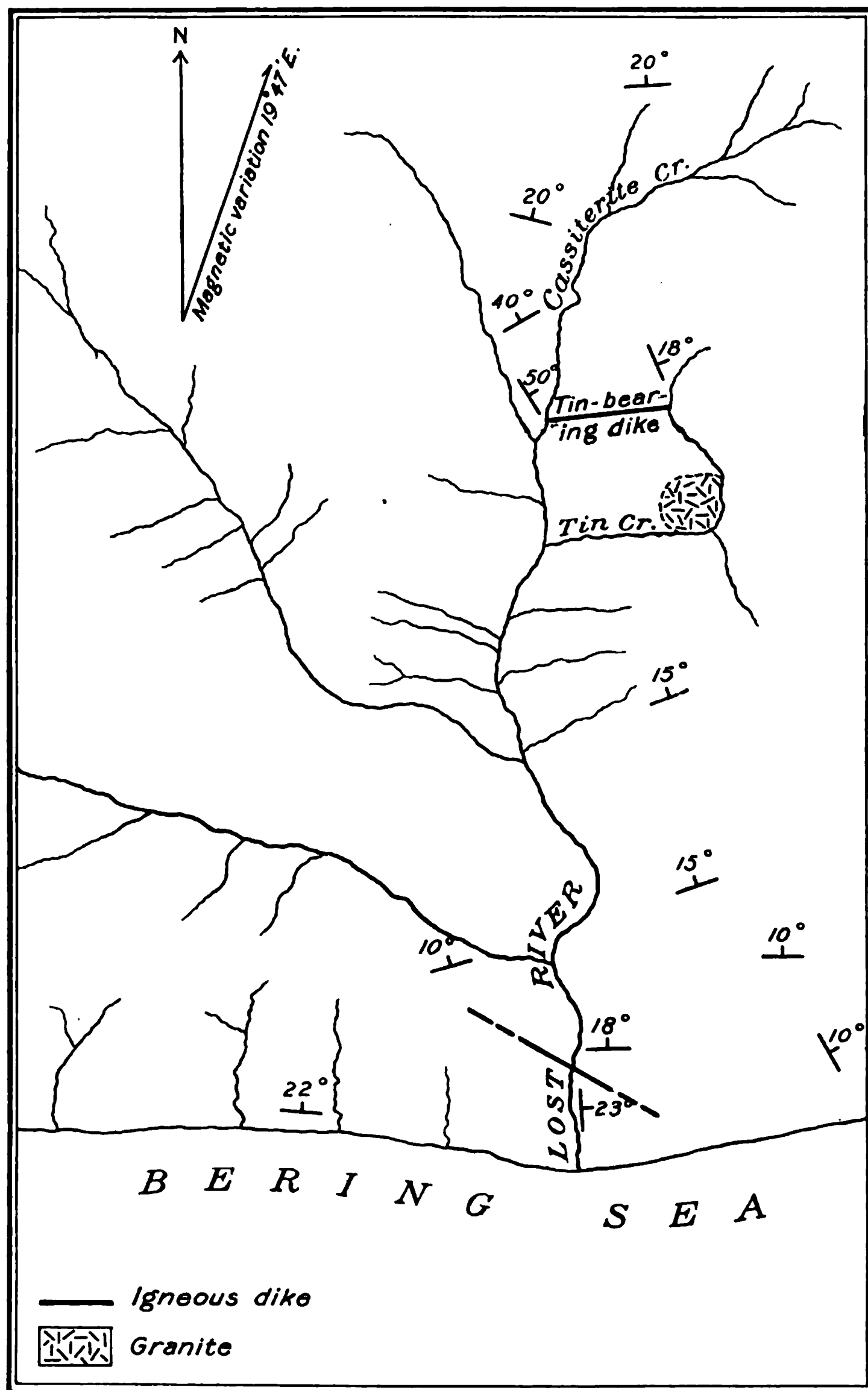


FIG. 3.—Sketch map of Lost River. Scale,  $\frac{1}{4}$  inch=1 mile.

About 4 miles from the coast the north fork of Lost River divides. The eastern branch is Cassiterite Creek; the western, which is somewhat larger, rises about 3 miles to the north, in the slopes of Brooks Mountain.

The Lost River tin deposits are located on the east side of the north fork of Lost River. (See fig. 3.) The ore has been found on Cassiterite Creek and on another eastern tributary, known as Tin Creek, which enters Lost River about a mile below the mouth of Cassiterite Creek. The latter stream has a length of about 3 miles; its head is within 1 mile of Cassiterite Creek, and after flowing parallel with Cassiterite Creek for about 1 mile it turns westward and enters Lost River from a deep canyon cut in the limestone of the York Mountains. At its mouth Cassiterite Creek is about 100 feet above the sea. In the latter part of July, 1903, Lost River carried approximately 1,000 miner's inches of water.

The York Mountains, in which the Lost River Basin lies, are composed almost wholly of ash-gray limestone of Silurian age, the Port Clarence limestone. Along Lost River the limestone shows little general metamorphism, and as a rule dips at low angles. From the coast to Tin Creek the strata generally dip to the north, and unless there are faults, which were not detected, a thickness of over 5,000 feet of limestone must be exposed. Near the mouth of Lost River a section of these limestones lying nearly horizontal is exposed in a mountain, called by prospectors Saddleback, which has an elevation of more than 2,000 feet above sea level. Dikes of igneous rock cut this limestone at several places along Lost River, and a number of these were readily traced across the limestone by a growth of moss and other vegetation which formed over them, the limestone itself being utterly devoid of vegetation. Microscopic examination shows that these dikes are of rhyolitic nature.

On Tin Creek, which enters Lost River from the east about  $4\frac{1}{2}$  miles from the coast, a large body of granite was found intruded in the limestone. This granite outcrop is believed to be nearly circular in outline and probably one-half mile in diameter. Around its margin the limestone was found to be considerably altered, and some small dikes of fine-grained pegmatite, probably apophyses from the main mass, were found cutting the limestone, apparently parallel with the contact of the limestone and granite.

Under the microscope the granite from the main mass is found to consist essentially of quartz, biotite, hornblende, orthoclase and acidic plagioclase feldspars with fluor spar, either accessory or secondary, and a few small grains of a mineral resembling zircon and believed to be cassiterite. Apparently the rock has been slightly crushed or sheared, producing streaks of fine-grained fragmental material of the same character as the original grains.

In Tin Creek, which flows for some distance along this contact, many boulders and pebbles, some of considerable size, were found to contain minerals, which are the result of contact metamorphism.

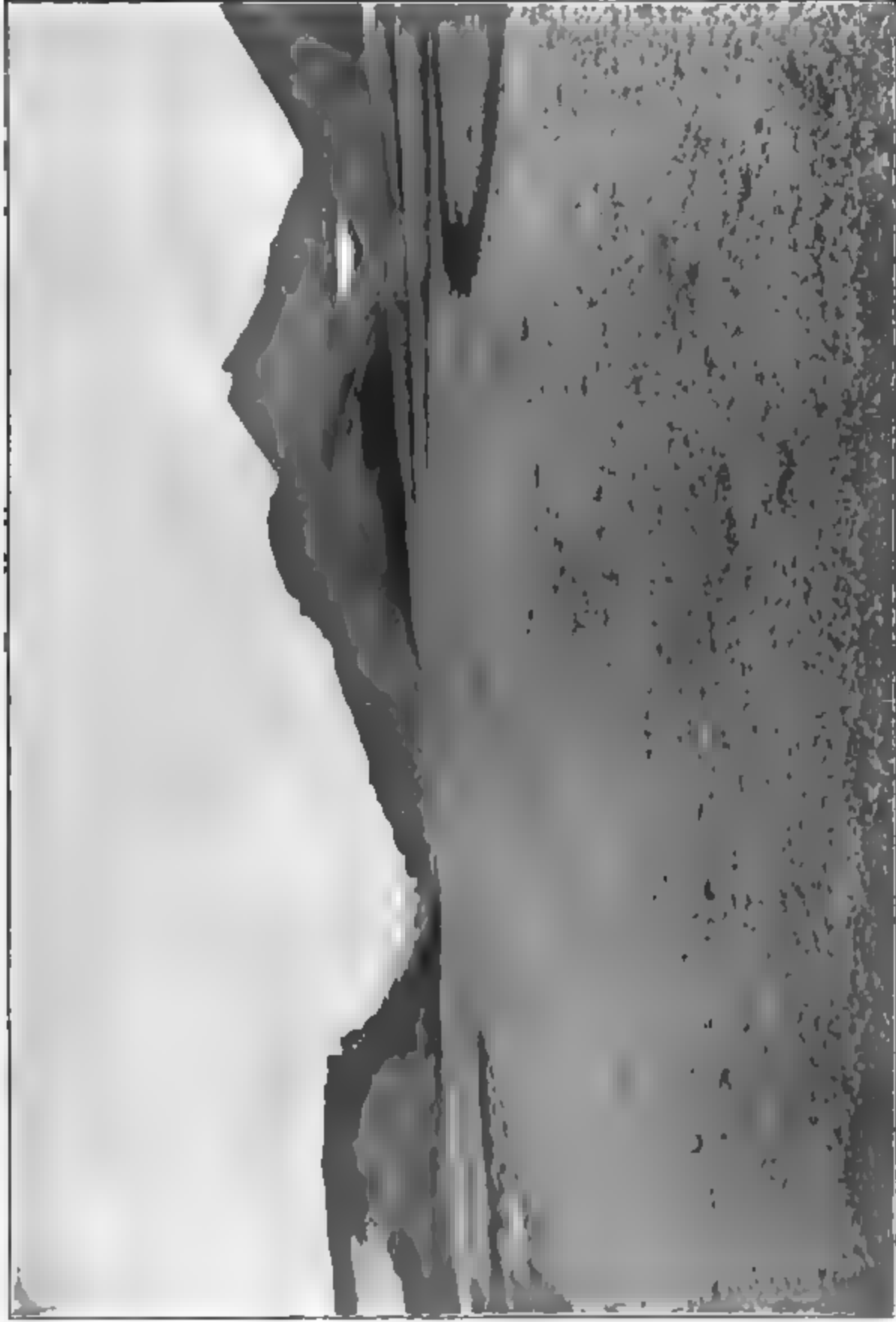
The main tin-bearing ledge outcrops nearly half a mile north of this



granite boss. It is a white, porphyritic dike, cutting the Port Clarence limestone, and striking nearly east and west. It has been traced from Tin Creek westward across the mountain to Cassiterite Creek, a distance of about 1 mile, but has not been found beyond these streams in either direction. All of this rock has been more or less altered, so that it is practically a greisen having crystals of cassiterite disseminated through it. Specimens collected near Tin Creek appear, in the hand specimen, to be a white aplite or porphyry with some small spots and large patches of purple. Under the microscope many of the original minerals are seen to have been replaced by fluorite, to which the purple color is due. Pseudomorphs of fluorite take the place of most of the feldspar crystals and of some of the quartz grains. (See Pl. V.) In specimens which are still more altered, collected from the same dike, near Cassiterite Creek, probably very few of the original minerals remain. The rock here is found to consist of calcite, fluorite, lithia mica, and quartz, proportioned in the order named. The limestone, on the south side of the dike, is altered for several hundred feet, and contains many greenish minerals, among which epidote and garnet have been identified. The limestones north of this dike are reported to contain many small stringers of tin ore for several hundred feet. The ore obtained from the main ledge varies considerably in general appearance and character. Some of the weathered ore from the croppings is highly siliceous, and has the appearance of weathered, iron-stained vein quartz with small black cassiterite crystals disseminated through it, while other specimens show clearly their granitic origin and contain comparatively little vein quartz. In the ore of the latter type the cassiterite occurs both as disseminated crystals varying in size from that of a pin head to that of a walnut and as veinlets and irregular masses. (See Pl. VII, *B*.) The granitic ore consists principally of calcite, fluorite, quartz, and large crystals of lithia mica; and in addition to the cassiterite, tourmaline, topaz, pyrite, garnet, and galena were observed in small amounts. Quantitative analyses of the lithia mica present made by W. T. Schaller, of the United States Geological Survey, show that it has the composition of zinnwaldite. In the float of this dike large specimens of galena, wolframite, and some malachite were collected, and in the altered limestone near the contact some large specimens of garnet were obtained. The siliceous ore mentioned above, when examined with the hand lens, sometimes showed spangles of free gold. A sample of this ore assayed<sup>a</sup> for gold and silver gave 0.36 ounce of gold per ton and a trace of silver. The piece assayed was a picked specimen, and not a commercial sample. Assays made for other parties are reported to show smaller amounts of gold in all cases. The occurrence of so much gold associated with the cassiterite seems to be unusual in tin ores, and merits further investigation.

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<sup>a</sup> Assay by E. E. Burlingame & Co., Denver, Colo.



VALLEY OF LOST RIVER, FROM THE COAST





Among the loose material from the croppings of the ledge a large piece of galena coated with yellowish alteration products was found. This may have come either from the ledge or from the altered limestone near the contact. An assay shows that it contains 0.08 ounce of gold and 7.76 ounces of silver per ton. Both on Tin Creek and on Cassiterite Creek tin ore in angular, unworn crystals is reported to have been found in the gravels of the stream beds. One specimen of placer tin of this kind obtained near the cropping of the large dike on Cassiterite Creek consists principally of crystals of cassiterite, but contains also wolframite and garnet.

The tin-bearing dike is readily followed from Cassiterite Creek eastward over a mountain having an elevation of about 1,000 feet to Tin Creek, a distance of about 1 mile. At the time the ledge was examined, in the latter part of July, 1903, no excavation had been made on it, and it was impossible to measure the exact width at any point, but surface débris indicated a width of about 100 feet. Since that time crosscut trenches have been made on the ledge near Cassiterite Creek, and the above estimate is reported to represent the facts.<sup>a</sup> The cassiterite was found to be distributed through the whole width of the dike.

No attempt will be made to give an estimate of the value of the deposit. The development on the ledge has not, as yet, gone far enough to allow systematic sampling, and until further excavations have been made the grade of the ore and the size of the deposit can not be determined. Picked specimens showing as high as 17 per cent metallic tin have been assayed, and still higher assays could be obtained by careful sorting. From the tests thus far made an average of 6 per cent for the whole width of the ledge is claimed.

The following assays of ore collected on this lode by Governor Hutchinson were made by Ledoux & Co., of New York:

*Assay of tin ore from Lost River.*

	Per cent tin.
Sample of ore marked "Dyke" .....	5.08
Sample of ore marked "Float" .....	15.70
Sample of ore marked "Greisen" .....	4.13

A partial analysis of one sample of the ore is as follows (No. 7451):

*Partial analysis of tin ore from Lost River.*

	Per cent.
Gold and silver .....	None.
Lead oxide (lead, 0.028 per cent) .....	0.030
Copper oxide (copper, 0.085 per cent) .....	.106
Arsenic oxide (arsenic, 0.38 per cent) .....	.580
Tin oxide (tin, 4.46 per cent) .....	5.74

<sup>a</sup> For information regarding developments subsequent to July 31, 1903, the writer is indebted to Gov. J. H. Hutchinson, a mine operator, who bonded several of the claims here in September, 1903. The facts as given by him are corroborated by others who have visited the locality.

	Per cent.
Manganous oxide (manganese, 0.424 per cent) .....	.548
Zinc oxide (zinc, 0.257 per cent) .....	.320
Nickel and cobalt oxides.....	Traces.
Silica.....	28.52
Alumina.....	33.55
Ferric oxide .....	8.31
Lime .....	6.75
Magnesia .....	.25
Lithium oxide .....	.09
Potassium oxide .....	.91
Sodium oxide.....	.36
Water, carbonic acid, etc .....	6.48
Sulphuric oxide (sulphur, 0.04 per cent).....	.10

The alumina, etc., may contain titanitic acid. The magnesia and alkalis require confirmatory determinations.

Tin ore in the form of stannite or tin pyrites has been found on Tin Creek at the upper contact of the large granite area which has been described, and about half a mile below the cassiterite ledge. Specimens of mineralized granite were collected at this place, which, on examination in the laboratory of the Survey, are found to contain a small amount of tin in the form of stannite, together with other sulphide minerals. A sample of this ore assayed by Mr. E. C. Sullivan contained 0.3 per cent tin. Mineralized granite of this character appears to cover a considerable area, but the ore is probably of little value, except as showing the distribution of tin through the granites of the region.

In 1898 a party of disappointed prospectors, returning from Kotzebue Sound, were shipwrecked a few miles east of the mouth of Lost River, and were obliged to camp at that point during the winter. A cabin built largely from wreckage of their schooner is still standing, and is known as the Kotzebue cabin. These prospectors probably first applied the name Lost River to this stream.

In the succeeding summer a mining district was organized by survivors of this expedition, with headquarters located on King River, which enters Bering Sea between Lost River and Cape York. The Lost River region was included at that time in the King River recording district. No discoveries of gold were made, however, and the region was abandoned by prospectors. In 1901 the writer, in company with Mr. D. C. Witherspoon, topographer, of the Geological Survey, made a hasty examination of Lost River, but did not discover any indications of tin ore.

In the winter of 1902 prospectors again turned their attention to this region in the search for tin ore. Granite-porphry dikes, which occur in the limestones near the mouth of Lost River and also near King River, first attracted their attention, and many specimens of this material containing dark colored or smoky quartz phenocrysts, which



CAPE MOUNTAIN, FROM YORK.



were mistaken for "tin crystals," were sent to various assayers, from whom widely divergent reports were obtained.

Early in the summer of 1903 Charles Randt, Leslie Crim, and W. J. O'Brien discovered the interesting minerals above referred to in float boulders in Tin Creek, a tributary of Lost River, and made a thorough search for tin ore in that vicinity. They made a large collection of minerals, which was referred to the writer when he arrived in Teller in July, 1903. Metallic tin was readily obtained from one small specimen by aid of a blowpipe, while the larger part of the collection<sup>a</sup> was shown to contain minerals of no value. The collection was of sufficient interest to tempt the writer to examine the locality in detail. Mr. Hess and the writer proceeded to Lost River and were there able to trace the tin ore which had been seen in Teller to the granitic dike on Cassiterite Creek, and also to obtain specimens of stannite ore from Tin Creek.

Since this examination the dike described has been called "Cassiterite ledge" in location notices, and it has been definitely traced through a group of four claims. A crosscut trench has been made near the Cassiterite Creek end of the ledge, which, it is reported, shows that the ledge has a width of 100 feet and that cassiterite is disseminated throughout the rock. It is also reported that other discoveries of tin-bearing ledges in this neighborhood have been made since July, 1903. The claims located on Cassiterite ledge have been purchased by an experienced mine operator and will be developed next summer.

#### CAPE MOUNTAIN.

Cape Prince of Wales, the most western point of Seward Peninsula, is marked by a high peak known as Cape Mountain. At the southeast base of this mountain a settlement called Tin City has grown up within the last year. The Eskimo village of Kingegan, the Congregational Mission, and Wales post-office are located on the north side, facing Bering Strait. From the summit of the mountain East Cape and other points on the Asiatic coast, only 60 miles distant, are plainly visible on clear days. On its west and south sides this mountain slopes down to bluffs that drop perpendicularly into the sea. On its southeast side, near Tin City, the coast recedes northward, making a bight, which affords some protection from west winds, but for the prevailing south winds of summer it is practically an open roadstead with landing facilities, little, if any, better than those at Nome or York. The nearest good anchorage is about 40 miles distant, on Port Clarence, from which there are several practicable railroad routes. A view of this mountain as seen from York, about 12 miles distant, is shown in Pl. IV.

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<sup>a</sup> A chemical analysis of one of these samples made by Mr. E. C. Sullivan, of the United States Geological Survey, shows no trace of tin. This sample consists mainly of tourmaline.

The greater part of the York region is occupied by the York Plateau, which is from 200 to 600 feet above the sea and is a result of erosion occurring during the period in which was produced the bench described in connection with the Lost River deposits.<sup>a</sup>

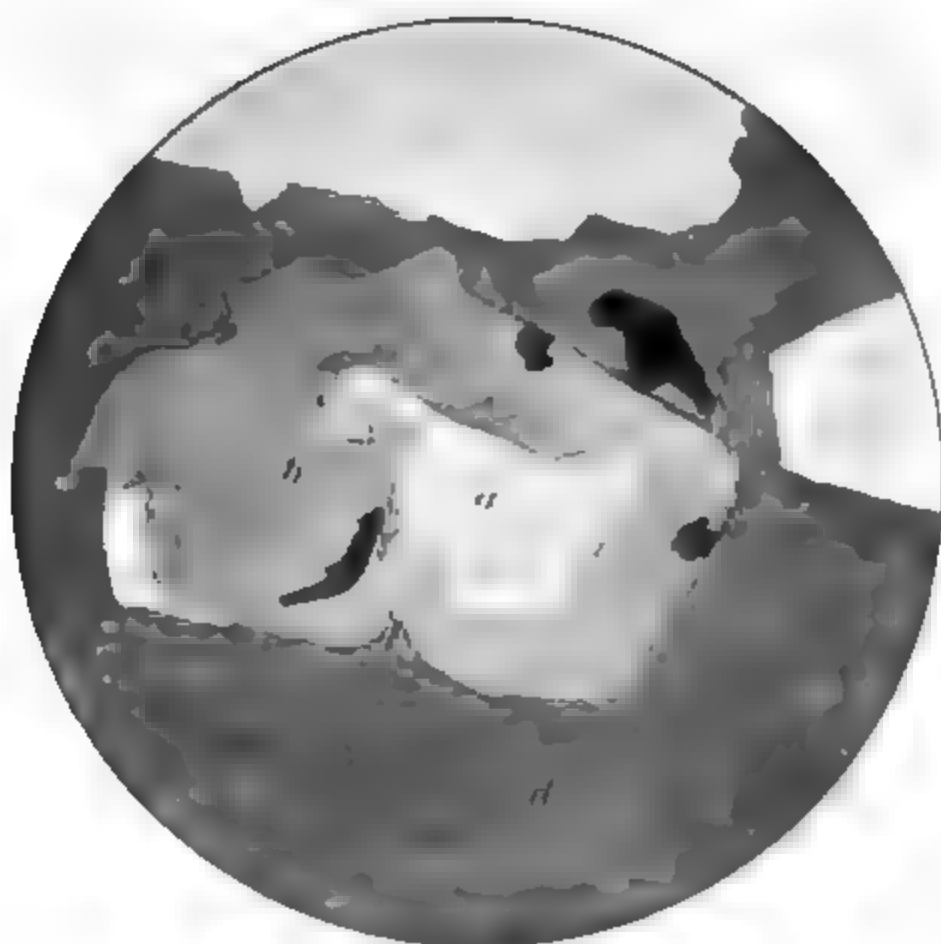
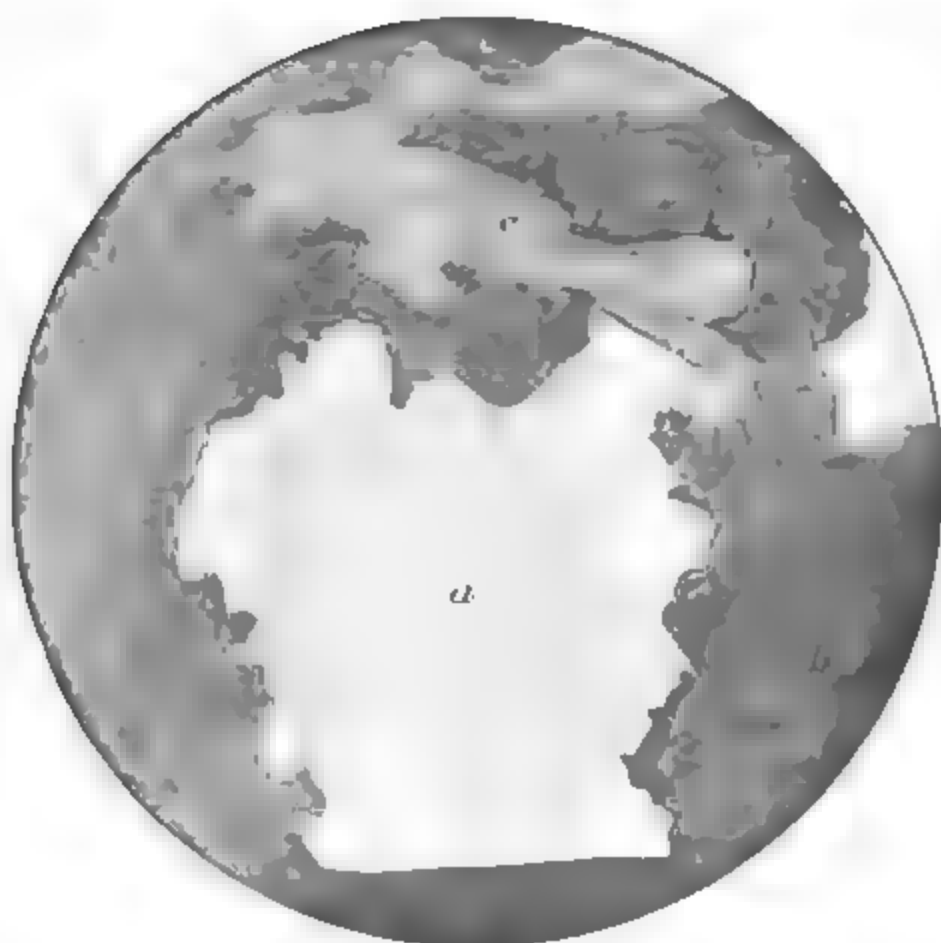
This plateau is trenched by the streams which drain the region, and the valleys have V-shaped cross sections, characteristic of newly established drainage. At the base of Cape Mountain, which rises to an elevation of 2,300 feet, the York Plateau has an elevation of about 300 feet above the sea. The interbedded schists and limestones above described form the bed rock of the plateau surface surrounding Cape Mountain, but the mountain itself is composed almost entirely of a granite boss intrusive in the limestone. The contact relations of the granite and limestone have not been studied in detail, but from data gathered in the hasty reconnaissances it appears that the granite cuts across the bedding of the limestone. This granite has already been described under the heading "Igneous rocks."

The writer's visit to this locality was of necessity a very hasty one, and work was hampered by exceedingly rainy weather, so that his observations were limited. Specimens of tin ore, however, were obtained from surface débris, which undoubtedly came from the granite of the mountain, though the ore was not definitely traced to its position in the solid rock. It is reported that tin ore has been found in at least three distinct places on this mountain, and that it occurs in somewhat irregular deposits which have an east-west trend. Several short tunnels have been driven into the mountain, but are reported not to have reached any ore bodies. The granite from some of these tunnels is partially altered to greisen and justifies the belief that the ore bodies may be not far distant. A sample of this granite, analyzed by Mr. Sullivan, of the Survey, was found to contain a few hundredths of 1 per cent tin.

The ore obtained at Cape Mountain differs in general appearance from that seen at Lost River. Large pieces of nearly pure cassiterite, one of which weighed fully 9 pounds, are said to have been found on the surface of the mountain. A specimen which the writer obtained weighs approximately 2 pounds and is nearly pure cassiterite, showing few crystal faces, but embedded in it and surrounding it are long, slender needles of tourmaline. While in this vicinity the writer saw a number of large, nearly colorless crystals of cassiterite which were practically transparent. Near the end of the season a large amount of supposed tin ore was collected on the flanks of Cape Mountain and shipped to Seattle, where it was examined by the writer and from it samples were selected for study in the laboratory. This supposed ore contains very little tin, but several dark crystalline minerals which

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<sup>a</sup> Collier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, pp. 36-39.

*A**B*

## THIN SECTIONS OF ALTERED PORPHYRITIC DIKE NEAR TIN CREEK.

- A* Magnified 80 diameters: *a*, feldspar, *b*, fluorite, *c*, fine-grained syenitic minerals, *d*, groundmass of fine-grained quartz, fluorite, sericite, and calcite.
- B*. Magnified 54 diameters: *a*, quartz phenocryst, *b*, groundmass, consisting mainly of fluorite and secondary quartz, *c*, zinnwaldite mica.





have been mistaken for cassiterite. A sample assayed for tin by Mr. Sullivan, of the Survey, contained a trace of tin, a few hundredths of 1 per cent. The principal constituent is tourmaline, in slender black or brown needles, and wolframite or scheelite are probably present, if, as reported, a considerable amount of tungsten was found.

Tin ore was discovered on Cape Mountain in July, 1902, by Mr. W. C. J. Bartels. In the fall of 1902 he brought out a large collection of specimens, which on examination by chemists and assayers, was found to include some tin ore. Extensive developments were planned for the season of 1903, and a well-equipped prospecting plant was sent to Cape Mountain. A large dynamo driven by a gasoline engine was to be placed near the beach at the point now known as Tin City, and from this dynamo wires to several points on the mountain were to supply power for electric drills. By the use of these drills it was expected that tunnels could readily be extended into the heart of the mountain and crosscut the ledges from which has come the float ore.

After spending nearly the whole of the season of 1903 in getting the machinery in place and establishing the winter camp it was found that the engine for driving the dynamo was defective, and the plan for development work during the winter of 1903-4 was necessarily suspended.

No work is now in progress on Cape Mountain, so far as is known, and very little advance has been made in revealing the nature of the ore deposits since the float ore was first discovered. This work, however, will undoubtedly be resumed in the summer of 1904, and it is to be expected that by the end of that season more definite information will have been obtained.

#### LOCALITIES FROM WHICH LODE TIN HAS BEEN REPORTED.

The discovery of tin ore in ledges has been reported by prospectors from many other localities in Seward Peninsula, some of which deserve notice, since the geologic conditions are known to be promising, and they will be described in some detail.

#### DIOMEDE ISLANDS.

These islands, which lie in Bering Strait, midway between Alaska and Siberia, are reported to be composed of granite, though they have not been examined by geologists. It is probable that they represent an intrusion similar to that at Cape Mountain. It is reported that copper ore has been found on them, and should the tin ore found on Cape Mountain develop commercial importance they may merit investigation.

## BROOKS MOUNTAIN.

This mountain lies about 11 miles north of the mouth of Lost River. The locality can easily be reached by a road up Lost River from the beach, or by a road following up Don River from Port Clarence. Wagons have been driven over both these routes. By the latter route the mountain is probably 20 miles from deep water of Port Clarence. The bed rock exposed on the mountain consists of highly altered limestones, and black slates which resemble the slates near York.<sup>a</sup>

The sedimentary rocks are cut by a number of granite and rhyolite dikes, which are believed to strike approximately east and west. All of the streams which head in Brooks Mountain, namely Lost River, Don River, York River, and Mint River, carry granite boulders that have been derived from the mountain.

In 1901 the writer observed in this vicinity some of the minerals that have been found associated with tin in the ledges seen within the past season, and in the winter of 1901 a prospector, who had spent considerable time in this same region, sent a collection of these minerals to the Geological Survey Office. This collection contains a great deal of tourmaline and garnet, both of which are associated with tin ore on Tin and Cassiterite creeks, about 4 miles south of Brooks Mountain. This locality seems promising for the occurrence of tin-bearing veins, though so far as is known to the writer no tin ore has yet been identified.

## DON RIVER.

On the west side of Don River there is a ridge of high hills composed, in part, of slates like those found near York.<sup>b</sup>

These slates are cut by intrusive dikes of quartz-porphry and granite resembling the intrusives of Brooks Mountain and Lost River. Some of the minerals often associated with tin ore have been found here, and the region is worthy of some investigation. This region lies about 10 miles east of Lost River and 9 miles north of Port Clarence.

## EAR MOUNTAIN.

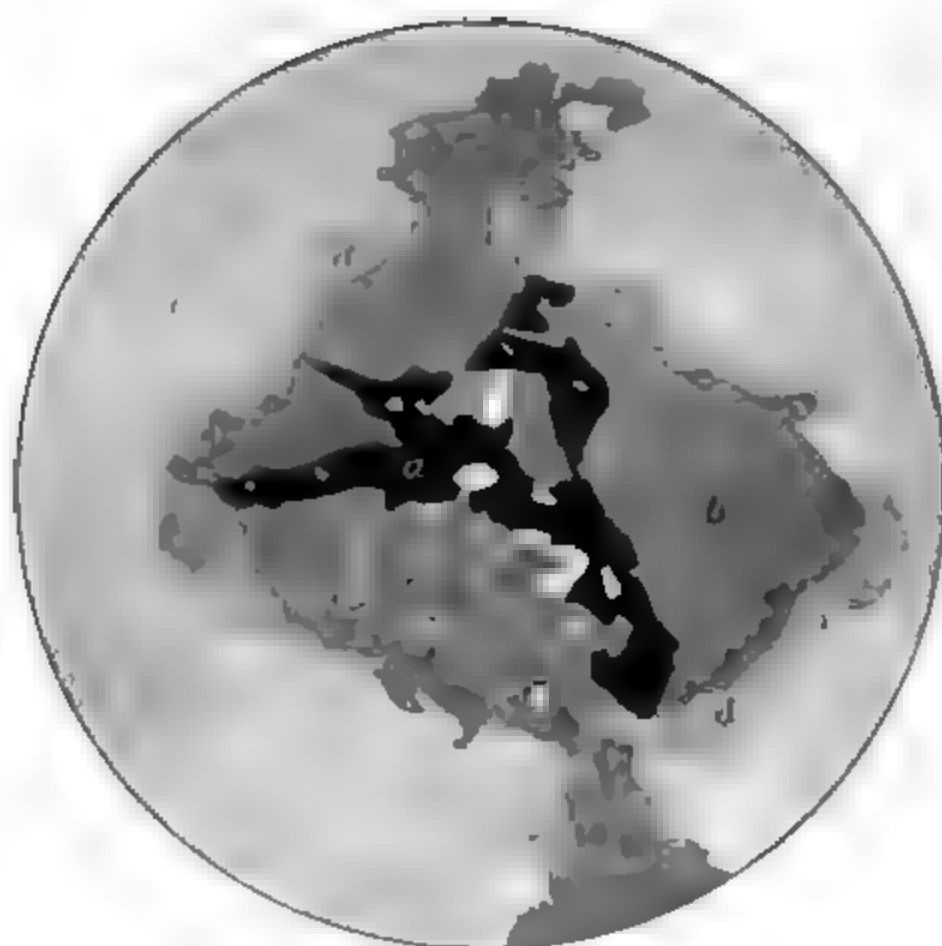
Ear Mountain is 50 miles north of Teller and 10 miles southwest from Shishmaref Inlet, a large, shallow body of water, not navigable for ocean vessels. Should the reported discoveries of tin be verified, and the ore occur in commercial quantities, a railroad not over 50 miles in length could be built to Port Clarence.

This mountain is an isolated upland mass that has an altitude of

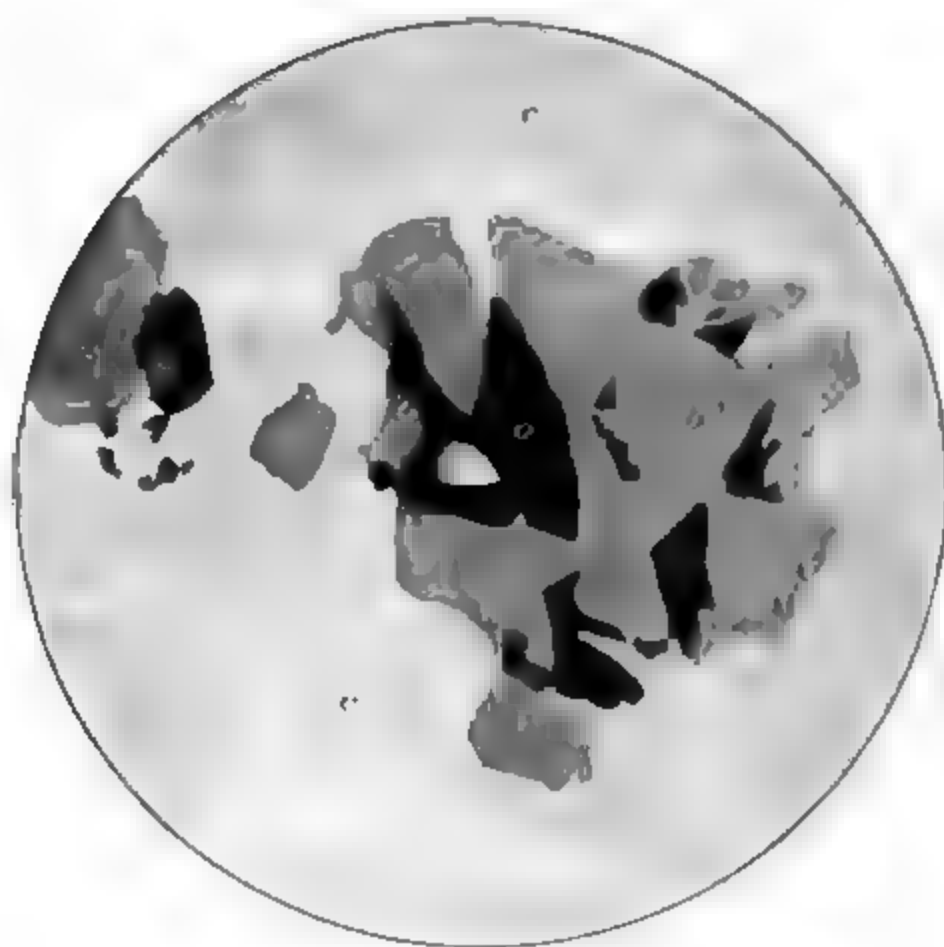
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<sup>a</sup> Collier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 30, Pl. III.

<sup>b</sup> Collier, A. J., *Idem*, pp. 46-47.



A



B

THIN SECTIONS OF PORPHYRITIC DIKE ON EAR MOUNTAIN.

- A** Magnified 23 diameters. *a*, pyrrhotite, *b*, tourmaline, *c*, quartz, *d*, feldspar, *e*, groundmass of quartz and feldspar.
- B** Magnified 23 diameters. *a*, pyrrhotite, *b*, tourmaline, *c*, kaolin and calcite pseudomorph after feldspar, *d*, groundmass of secondary calcite.



2,308 feet above the sea. It stands on a well-marked plateau surface that has an elevation of 1,000 feet. This plateau has been correlated with the Kugruk Plateau, and is due to an earlier era of erosion than that which produced the York Plateau.<sup>a</sup>

The sedimentary rocks surrounding Ear Mountain consist mainly of quartzites and dark slates, which resemble the slates near York and have been correlated with them. The core of the mountain is a granite boss or stock intruded in these slates. Radiating from the main granite mass there is a fringe of intrusive quartz-porphyry and rhyolite dikes which are regarded as offshoots from the main intrusion.<sup>b</sup>

The granites of the main mass are coarsely crystalline and consist essentially of quartz, orthoclase, and biotite. A specimen from one of the smaller bodies, examined microscopically, is made up essentially of quartz and of orthoclase and plagioclase feldspars. A narrow dike from the same region was found to consist essentially of quartz and feldspar, with muscovite, largely secondary, and a secondary growth of feldspar surrounding the larger orthoclase crystals. In Ear Mountain a platy structure brought out by the weathering gives the rock a stratified appearance.

Tin ore has been reported to occur in this region, and it is probably true that some cassiterite has been brought out by prospectors. The specimens of supposed ore which were submitted to the writer contained, however, only traces of tin, though some of the minerals often associated with its ores were present. On the north side of the mountain quartz-porphyry dikes can be traced for considerable distances. Several specimens of these rocks have been carefully examined in the laboratories of the U. S. Geological Survey. Apparently they were originally rhyolites or quartz-porphyrines, but in thin sections they show considerable alteration. In one case the porphyritic texture of rhyolite remains, but the minerals, especially the feldspar phenocrysts, are partly replaced by tourmaline and pyrrhotite or magnetic pyrite, as shown on Pl. VI. In this case the tourmaline was probably first introduced and was followed by the pyrrhotite. No cassiterite has been identified in the section. In another section the original texture is completely obliterated and the rock consists essentially of tourmaline in radiating groups of crystals surrounded by a groundmass made up principally of calcite with some quartz (Pl. VII, 1). Magnetite and biotite seem to be present in small amounts, and probably also cassiterite, though it has not been detected in the thin sections. This specimen resembles in texture the luxullianite<sup>c</sup> from Cornwall, but differs from it in composition, since the groundmass of the typical

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<sup>a</sup> Collier, A. J., Prof. Paper U. S. Geol. Survey No. 2, p. 35.

<sup>b</sup> Collier, A. J., op. cit., p. 30.

<sup>c</sup> Harker, Alfred, Quart. Jour. Geol. Soc. London, 1895, vol. 51, p. 141. Rosenbush, H., *Mikroskopische Physiographie der Massigen Gesteine*, vol. 2, pt. 1, p. 50. Kemp, James Furman, *Handbook of Rocks*, p. 32.

luxullianite consists largely of feldspar and quartz, while in this rock it is largely calcite.

Four samples of rock from the north side of Ear Mountain were assayed for traces of tin by Mr. Sullivan of the Survey. While none of them carry tin in commercial quantities, traces of tin, estimated at a few hundredths of 1 per cent, were found in all of them. A prospecting shaft, it is reported, was sunk on one of these dikes, and samples obtained from considerable distance below the surface were found to be largely made up of dark mica and tourmaline. It is also reported that stream tin has been found in several of the creeks that head in Ear Mountain.

#### HOT SPRINGS.<sup>a</sup>

This locality is 70 miles northeast from Port Clarence, about 30 miles southeast from the head of Shishmaref Inlet, and 30 miles from deep water on Goodhope Bay. It takes its name from a group of hot sulphur springs, well known to prospectors and miners, around which there is usually a small village of tents.

In summer time the usual route of travel to this locality is by way of Imuruk Basin and the Kuzitrin and Kugruk rivers. If tin deposits of value should be discovered in this vicinity a road would probably be constructed to Goodhope Bay. The general bed rock of this vicinity is graphitic mica-schist, but at Hot Springs this schist is intruded by a large body of granite several miles across. The granite is of the same general type as that of Ear Mountain, but it has not been examined microscopically. In Professional Paper No. 2 two characteristic landscapes within this granite area are shown on Pls. VIII and IX.

Since the discoveries of tin ore were made in the granites of the York region, prospectors have turned their attention to this area, and samples of tin ore purporting to come from it were brought to Nome late in the season of 1902.

#### ASSES EARS.<sup>b</sup>

Near the headwaters of the western tributaries of Pinnell River, in the region south of the eastern extension of Kotzebue Sound, are a number of small isolated areas of granite, surrounded by massive crystalline limestones. These granites have been more resistant to weathering than the limestones, and stand out as prominent hills or buttes. One of these forms the well-known landmark called the Asses Ears, which was so named by Kotzebue in 1816, because "its summit is in the form of two asses' ears." A few miles to the north-

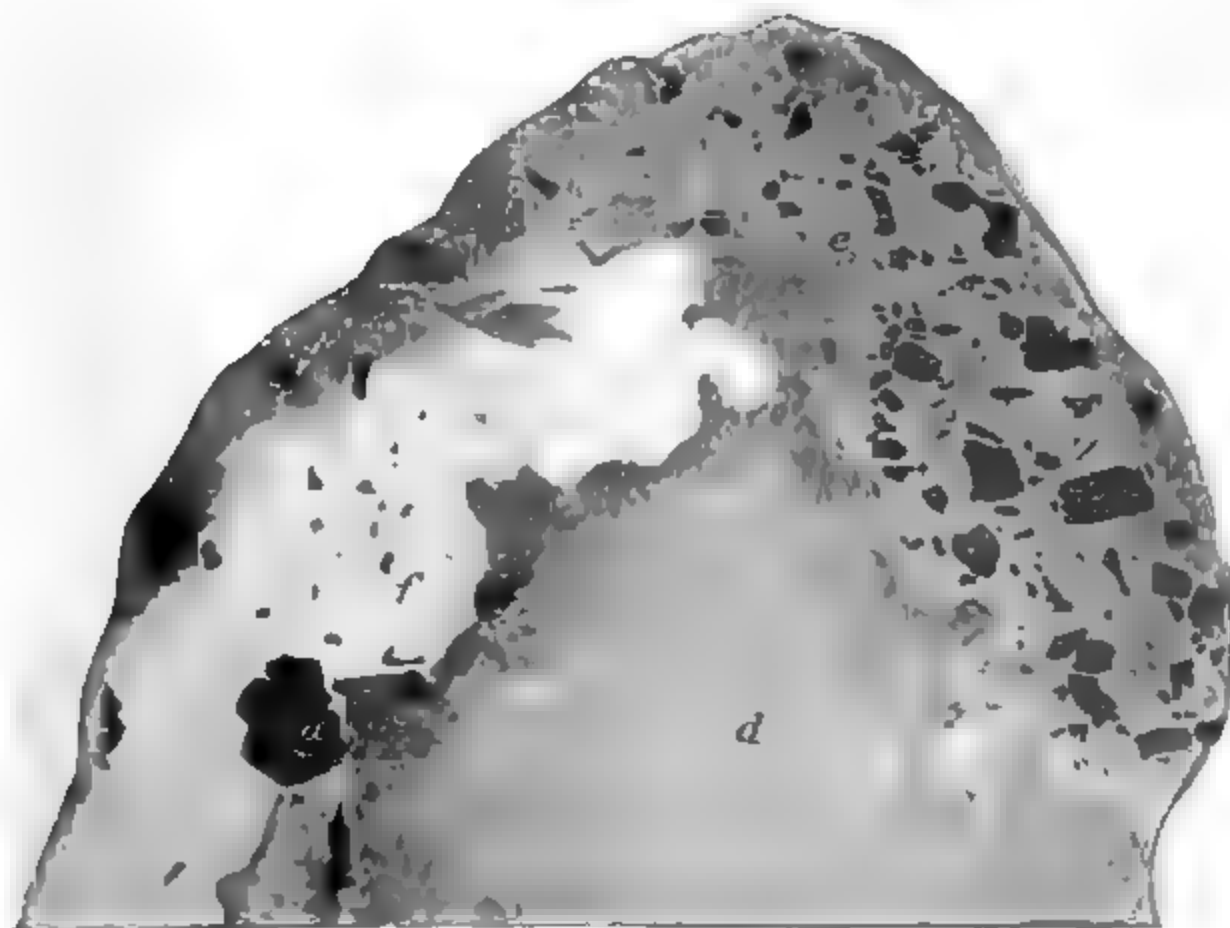
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<sup>a</sup> Coillier, A. J., A reconnaissance of the northwestern portion of Seward Peninsula, Alaska: Prof. Paper U. S. Geol. Survey No. 2, 1902, p. 55

<sup>b</sup> This note is furnished by Mr. Fred H. Moffit, in advance of his report on "A reconnaissance of the northeastern portion of Seward Peninsula."



**A. THIN SECTION OF LUXULIANITE FROM EAR MOUNTAIN.**  
Magnified 80 diameters. *a*, tourmaline, *b*, groundmass of secondary calcite.



**B. POLISHED SURFACE OF TIN ORE FROM LOST RIVER.**  
*a*, Cassiterite; *b*, gray pyrite; *c*, zinnwaldite mica, *d*, fluorite *e*, groundmass of fluorite and calcite; *f*, groundmass, chiefly kaolin.





west is another granite area, smaller and much less prominent than that forming the Asses Ears. These two localities are situated south of the Sound and, since they are not favorable places for placer gold, have been rarely visited. A third granite area makes up the central mass of the elevated watershed between Kiwalik and Buckland rivers. This range extends from Kotzebue Sound to within a few miles of Koyuk River, a distance of about 40 miles. Here the granites are found only in the higher central part of the mass, and are surrounded by later eruptives, including andesitic rocks and lavas which form the lower hills.

These granites are all variable in their texture, and often have an extremely coarse, pegmatitic appearance. Twinned orthoclase feldspars, 2 or 3 inches in length and three-fourths of an inch thick, are not uncommon, and hornblende crystals of large size are found in places. Locally, quartz seems to be absent and the rock becomes syenitic in character. Fluorite was seen in joint planes in the granites northwest of the Asses Ears, suggesting the possible presence of tin ores such as occur with this mineral in the western part of Seward Peninsula.

Dr. Cabell Whitehead, of the Alaska Banking and Safe Deposit Company, reports the presence of cassiterite in the form of fine sand in gold taken from Old Glory Creek, which heads up toward the limestone area in which the previously mentioned granite masses of the Asses Ears region occur.

#### LOCALITIES WHERE STREAM TIN HAS BEEN FOUND.

##### BUCK CREEK.<sup>a</sup>

Buck Creek was the scene of the first actual mining of tin ore in Alaska, and is the present center for tin-placer mining activities. This settlement is on the Arctic slope of Seward Peninsula, about 20 miles northeast from York, and 4 miles from tide water on Lopp Lagoon, an inlet from the Arctic Ocean. It is reached by a wagon road from York, which follows the bed of Anikovich River for 10 miles, then crosses a low divide to Grouse Creek and follows Grouse Creek to its junction with Buck Creek. This road is fairly good, except for 1½ miles of soft tundra<sup>b</sup> on the divide between Anikovich River and Grouse Creek, where it is almost impassable for heavy wagons. A good road-bed could easily be built here by bringing gravel from Anikovich River. Lopp Lagoon is not navigable for seagoing vessels and affords no harbor for such craft. It is a large, shallow body of water, sepa-

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<sup>a</sup> This description of the tin placers of Buck Creek is based on the work of Mr. Frank L. Hess.

<sup>b</sup> The Standard Dictionary gives the following definition of "tundra": "A rolling plain of Russia and Siberia, covered with moss and at times very moist and marshy." "The 'tundras' of northern latitudes are frozen plains of which the surface is covered with arctic mosses and other plants."—Archibald Geikie, *Text-Book of Geology*.

rated from the Arctic Ocean by a low sand spit, on the seaward side of which the shallow water is reported to extend out about 2 miles from the coast, so that landing is difficult. For small, flat-bottomed boats, however, this lagoon is navigable, and it is possible that such boats might, but not probable that they ever will, convey tin ore from the Buck Creek mines, out through the inlet, to vessels lying offshore in the Arctic Ocean. It is reported that small boats can be brought up Mint River and Grouse Creek to within 1 mile of the mouth of Buck Creek. These streams, however, are shallow and crooked, and it is not probable that they can be used successfully for conveying ore from Buck Creek to the sea.

The plateau already described extends northward from the town of York on the coast of Bering Sea to the Arctic Ocean. It has an elevation of about 600 feet near York, and slopes to sea level a few miles from the Arctic coast. Buck Creek and the other streams in its vicinity flow in comparatively new valleys cut in this plateau. Above the surface of the plateau there are several buttes, of which Cape Mountain and Potato Mountain<sup>a</sup> are the most prominent. Potato Mountain is a large, cone-shaped mountain, having an elevation of 1,370 feet. From this mountain a range of low hills extends northward for a distance of 3 or 4 miles toward Lopp Lagoon.

Buck Creek is a small stream, about 5 miles in length, which rises in this range of hills and flows southeastward to Grouse Creek. Its waters are then carried northward through Mint River and Lopp Lagoon to the Arctic Ocean. About 1 mile from its mouth Buck Creek receives a large tributary from the south, called Sutter Creek, and about 4 miles above its mouth it again forks, the two branches being known, respectively, as Right and Left forks. Several smaller tributaries are received between Sutter Creek and these upper forks.

The bed rock on which the York Plateau is developed, and in which Buck Creek Valley is incised, is a dark, slaty schist, which has been already described. Along Buck Creek it has the characteristic jointing described in the general discussion of the geology of this region.

The mountains west of Buck Creek, including Potato Mountain, are composed of similar slates. They apparently contain no intrusive, igneous rocks, either of the greenstone or granite type.

Near the mouth of Buck Creek boulders and pebbles of greenstone occur in the gravel deposits. These have not been traced to their source, but they probably came from a group of hills on the east side of Grouse Creek before the present drainage was established. At a number of places along Buck Creek small quartz veins were found cutting across the bedding or running parallel with it through the slate. Some of these quartz veins are as much as 3 or 4 feet thick,

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<sup>a</sup>The name Conical Hill was applied to this mountain by Captain Beechey in 1826. It is said to have been called "Potato Mountain" by the Russians. On the topographic map, Prof. Paper No. 2, Pl. XII, the mountain is called "Cone Hill."

and two of them can be traced for a quarter of a mile or more. Most of the veins are mere stringers, 1 or 2 inches thick and only a few feet long. In one instance a vein of nearly pure pyrite 6 or 8 feet wide was seen. Pebbles of pyrite 2 or 3 inches in diameter, oxidized on the outside, are found in the gravels below this vein.

Mr. Edgar Rickard<sup>a</sup> reports on this deposit as follows:

The source of the cassiterite can be readily traced to the slate of the [Potato Mountain] range, where it undoubtedly occurs in countless small veins and vugs, sometimes associated with quartz and so thoroughly scattered through the mass that the action of the elements has washed it from the hillsides and concentrated it in the streams below in appreciable deposits.

Though specimens obtained from the gravel show that this is true, no veins of this kind were seen by Mr. Hess nor by the number of prospectors who were actively engaged in a search for tin-bearing veins. It is of interest to note that no granitic rocks or acid intrusives of any kind have been found associated with the phyllites, nor have any pebbles of such rocks been found in the gravels. So far as the surface indications show, it appears that the tin ore has its source in veins which are of distinct origin from those found in association with granitic rocks.

The gravel deposits in the bed of Buck Creek are from 10 to 150 feet wide, varying greatly in different parts of the creek.

Cassiterite, in the form of stream tin, is distributed from the mouth of the creek to within a mile of its head, above which point little more than traces have been found. The ore varies in size from fine sand to pebbles weighing 13 or 14 pounds. Several pieces from 5 to 8 pounds in weight were seen by Mr. Hess, though the average size is much smaller. A few of the pebbles are perfectly rounded, but most of them are subangular. The ore from the claims near the mouth of Buck Creek is generally well rounded, while that from near the head is sharp and angular. In general the stream tin grows more angular as the head of the creek is approached.

The color of the cassiterite varies from almost black to a light resin or amber; when crushed, however, it makes a light-colored resinous powder, by which it is readily distinguished from hematite or other iron minerals that are frequently mistaken for it, since they invariably give a distinctly red, brown, or black powder. A number of specimens were obtained with pieces of quartz and slate still attached to them, leaving no doubt as to the local origin of the fragments. Sometimes small pieces of cassiterite are found inclosed between fragments of slate, showing that the ore sometimes occurs as veinlets in the bed rock.

Near the head of Buck Creek Mr. Edgar Rickard,<sup>a</sup> in 1902, tested

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<sup>a</sup> Rickard, Edgar, Tin deposits of the York region, Alaska: Eng. and Min. Jour., vol. 75, 1903, p. 30.

the gravels systematically and found that they contain about 8 pounds of 60 per cent ore to the cubic yard. The value per yard on this basis, with tin at 28 cents per pound, would be \$1.34, out of which charges for shipping and treatment would have to be paid.

Mr. Hess saw pannings made at a number of places along Buck Creek, but not enough to test thoroughly the richness of the gravels. The best that were seen came from immediately above the mouth of Sutter Creek, where a drain ditch from 2 to 2½ feet deep was under construction. Seven pans taken from various parts of the gravel thrown out of this ditch gave about 1 pound 6 ounces of concentrates. Estimating 20 pounds of gravel to the pan, this would give approximately 27 pounds of, say, 60 per cent ore to the cubic yard of gravel. Bed rock was here 5½ feet below the surface, and the gravel approximately 100 feet wide. A few good colors of gold were found in the concentrates. At this point there seemed to be no difference in the distribution of the tin ore through the gravels below the surface. It seemed from the evidence of prospectors that this uniform distribution through the gravels prevailed generally along the creek, though at one place it was found to be richer on bed rock.

It is reported that cassiterite has been found in a bench near the upper forks of Buck Creek, but no definite data were obtained concerning the nature of the occurrence.

On Grouse Creek, below the mouth of Buck, the amount of tin ore is reported to be very small, and while Mr. Hess found no evidence of prospecting in this section, and is of the opinion that practically none has been done there, the gravel deposits are more extensive than those on Buck Creek and seem to be worthy of attention. No large amounts of cassiterite have been reported from either Gold Creek, a tributary of Grouse above Buck, or from Sutter Creek, the large southern tributary of Buck, nor has much gold been found there.

To summarize the evidence with regard to the Buck Creek region, tin ore has been found in the gravels of the creek from its mouth to within 1 mile of its head. The pay streak appears to be confined to the present stream-bed and flood-plain deposits. In the present creek bed the ore is found from the surface to the bottom of the gravels. Outside the creek bed, in the flood plain, there is a covering of moss and muck above the pay gravel. No cassiterite is known to have been found on the hillsides surrounding Buck Creek or on the plateau surface in which Buck Creek Valley is incised, though such an occurrence is to be expected. The known pay streak varies in width from 10 to 150 feet, and in thickness from a few inches to 5 feet. Estimates of the amount of tin ore in the gravels vary from 8 to 27 pounds per cubic yard, but very few comprehensive tests have been made.

At the time of Mr. Hess's visit to Buck Creek, near the end of

July, sluicing for tin ore was in progress at only one place. The creek valley still contained great drifts of snow, and mining operations generally were retarded by the lateness of the season.

Stream tin is harder to separate from the gravel than is gold on account of its lower specific gravity, but the methods employed in washing it out were modifications of somewhat primitive processes of gold placer mining. Ten men were shoveling into the one "string"

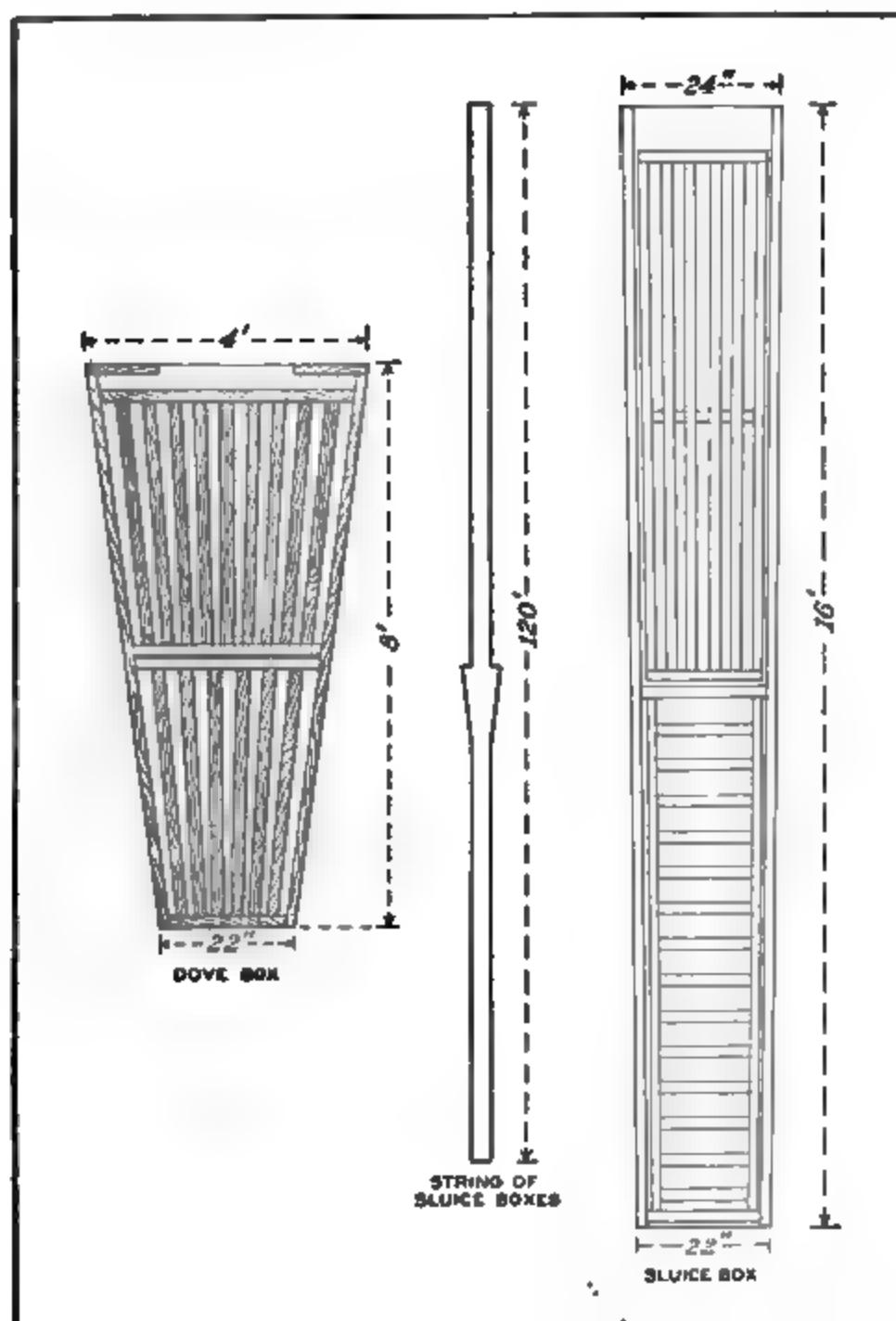


FIG. 4.—Sluice boxes used in washing placer tin in York region.

of sluice boxes and a clean up was made four times a day, so that the work was frequently interrupted. The sluice boxes used were 16 feet long, 24 inches wide at the upper end and 22 inches wide at the lower end, and 7 boxes were used in a "string," making a total length of 150 feet. A "dove box" 8 feet long, 4 feet wide at the upper end and 22 inches wide at the lower end, with riffles, was

introduced between the fourth and fifth boxes from the upper end (see fig. 4). Ordinary patterns of Pole and Hungarian riffles were used, except that they were made of  $2\frac{1}{2}$  by  $1\frac{1}{2}$  inch material, which is larger and heavier than that ordinarily used in sluicing for gold. About 100 miner's inches of water constituted a sluice head for this apparatus. It is reported that the concentrates obtained averaged about 40 pounds per day to the shovel. The concentrates from the sluice boxes were further concentrated by hand by panning in a box 5 feet long by 3 feet wide and 8 inches deep, into which water flowed

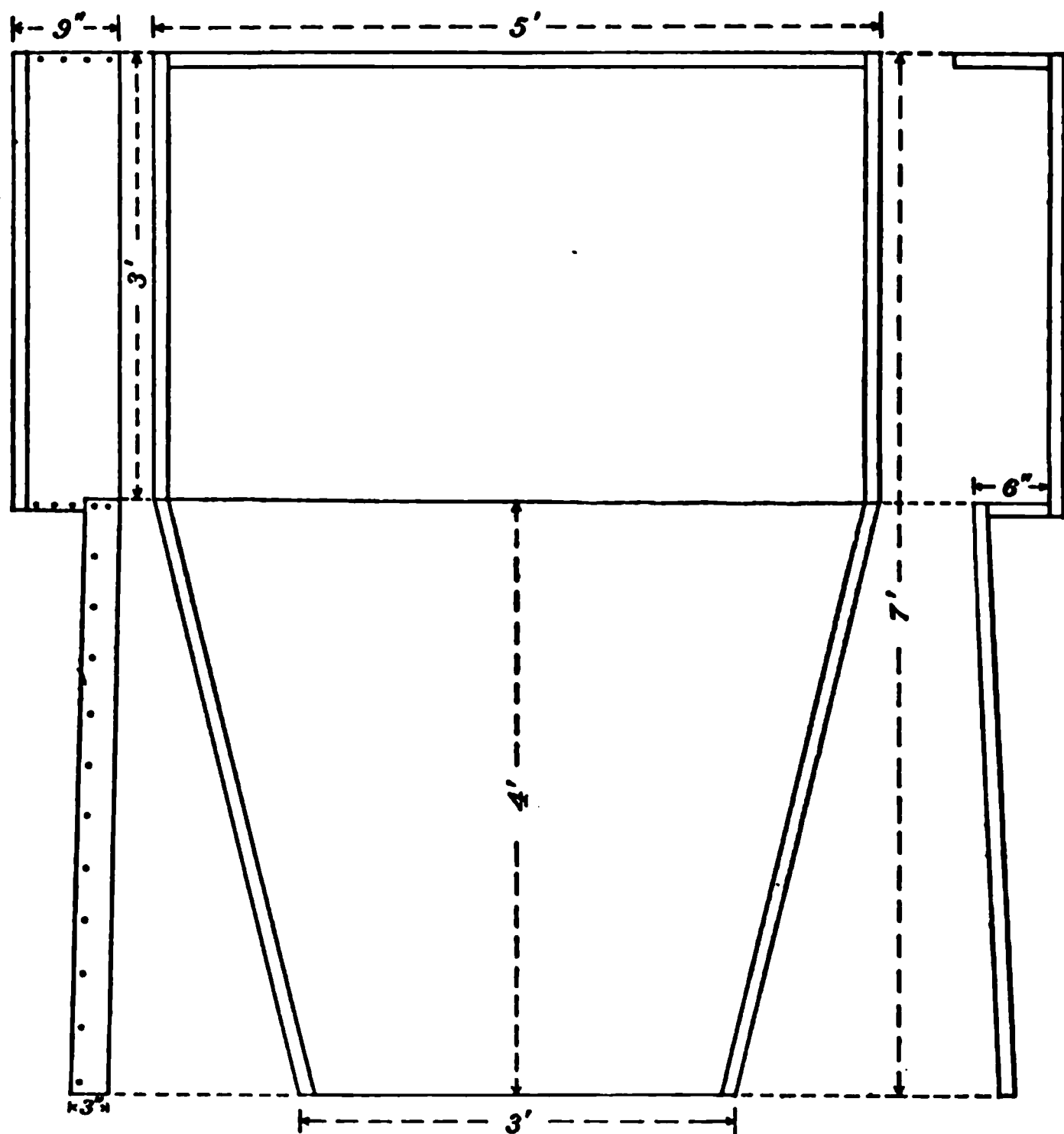


FIG. 5.—Box used in washing stream tin concentrates.

through a canvas hose and flowed out over an apron 4 feet long in a stream about three-quarters of an inch deep, as shown in fig. 5. The concentrated gravel was gradually worked up over the edge of the pan, which was kept just submerged at the upper end of the apron, where the stream of water carried away the lighter portion, while the heavier particles sank in the box. It is reported that concentrates treated in this way averaged about 50 per cent tin. The larger pieces of foreign matter were picked out by hand. The impurities in the concentrates are mainly hematite, magnetite, quartz, and slate.

Later in the season some sluicing for tin ore was done at several

other points on Buck Creek, and altogether a considerable amount of tin ore, estimated at from 30 to 40 tons, was obtained and hauled to York for shipment.

Should further prospecting demonstrate that there are large amounts of stream tin in Buck Creek or any of the neighboring streams, practical mining will require the introduction of more economical methods to overcome the handicap of short seasons and high wages. In other parts of Seward Peninsula hydraulic mining has been practiced with marked success in the gold placers, and the same method can probably be adapted to the tin placers as well. Water for this purpose can be obtained from the streams rising in the York Mountains. The feasibility of collecting water from these streams for working the tin placers of Buck Creek and vicinity will be readily seen from the topographic map of the region (Pl. II), but the question whether or not the deposits will warrant the necessary expenditure can not be settled without further development.

#### ANIKOVIK RIVER AND BUHNER CREEK.

The localities on Anikovich River and Buhner Creek, where tin ore was discovered in 1900, are 2 and 3 miles, respectively, from York. Buhner Creek flows into Anikovich River from the west, a short distance north of the point where Banner Creek enters the Anikovich. The following description of these deposits is quoted from Mr. Brooks:<sup>a</sup>

On Buhner Creek 2 or 3 feet of gravel overlies the bed rock, which consists of arenaceous schists, often graphitic, together with some graphitic slates. This is part of the schist series which has been described. The bed rock is much jointed, the schists being broken up into pencil-shaped fragments. They strike nearly at right angles to the course of the stream and offer natural riffles for the concentration of heavier material. A hasty reconnaissance of the drainage basin of this stream, which includes not more than a square mile of area, showed the same series of rocks throughout its extent. At a few localities some deeply weathered, dark-green intrusives were found, which, on examination by the microscope, were found to consist almost entirely of secondary minerals. In some cases, however, a little plagioclase was still unaltered and a suggestion of ophitic structure remained, so that these are probably of a diabasic character. The slates and schists are everywhere penetrated by small veins, consisting usually of quartz with some calcite, and frequently carrying pyrite and sometimes gold. These veins are very irregular, often widening out to form blebs, and again contracting so as not to be easily traceable.

The stream tin is concentrated on the bed rock with other heavy minerals, and was found by the miners in the sluice boxes. A sample of the concentrate<sup>b</sup> in one of the sluice boxes was examined by Mr. Arthur J. Collier, and yielded the following minerals: Cassiterite, magnetite, ilmenite, limonite, pyrite, fluorite, garnets, and gold. The determination of percentage by weight was as follows: 90 per cent tin-

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<sup>a</sup> Brooks, A. H., An occurrence of stream tin in the York region, Alaska: Mineral Resources U. S. for 1900, U. S. Geol. Survey, 1901, p. 270.

<sup>b</sup> The sample of these concentrates from which the first determination of tin ore in Alaska was made was obtained from C. B. Kittredge, who was mining on Buhner Creek. Another sample was obtained from Mr. Trumble, a miner on Anikovich River.



stone; 5 per cent magnetite; other minerals, 5 per cent. The cassiterite occurs in grains and pebbles, from those microscopic in size to those half an inch in diameter; they have subrounded and rounded forms. In some cases there is a suggestion of pyramidal and prismatic crystal forms. The cassiterite varies in color from a light brown to a lustrous black.

A second locality of this mineral was found on the Anikovik River, about half a mile below the mouth of Buhner Creek. Here the cassiterite was also found with the concentrates from the mining operations. One pebble of stream tin obtained from this locality was about 2 inches in diameter.

It will be necessary to make a more detailed examination of this region to determine where this mineral occurs in the bed rock. The facts obtained by the writer point toward the conclusion that its source was in the quartz and calcite veins in which the gold was found. No cassiterite was, however, found in this vein material.

Since 1901 these workings have been abandoned by miners, neither gold or cassiterite having been found in paying quantities. On Anikovik River there are extensive gravel deposits, which may possibly be made to yield fair returns either in gold or tin if economically worked on an extensive scale by hydraulic methods. Sufficient water for this purpose can probably be obtained either from the head of Anikovik River or from Kanauguk River.

#### LOCALITIES FROM WHICH STREAM TIN HAS BEEN REPORTED.

It is reported by prospectors familiar with the Buck Creek deposits that some tin ore has been found in alluvial deposits on Baituk and Kigezruk creeks, flowing into Bering Sea; in Banner Creek, tributary to the Anikovik; several small streams flowing into Lopp Lagoon; Clara Creek, a tributary of Mint River; and in York Creek, a tributary of Pinguk River, all in the York region. Stream tin has also been reported from all parts of Seward Peninsula where gold mining is in progress, but outside of the York region these reports have generally been without foundation. Last summer, however, Mr. Hess obtained from a miner a specimen of stream tin said to have been found on Gold Bottom Creek, a tributary of Snake River, in the Nome district. If this find was genuine it indicates a wider distribution of the tin ore than has heretofore been supposed, and is the only case known in which stream tin has been found in the gold placers near Nome. There is probably not enough tin ore there to have economic value.

The bed rock of Gold Bottom Creek consists of limestones and schists of the Nome series.

#### SUMMARY OF ECONOMIC GEOLOGY.

Tin ore in considerable quantities has been found in the York region at a number of widely separated localities, the extreme points known being 25 miles apart. While the existence of tin ore in sufficient quantities to be worked on a profitable scale has not yet been demonstrated because of the remoteness of the region, the inhospitable

climate and the cost of labor, the probabilities are that further development will prove some of the deposits to have commercial value.

The ore occurs in both alluvial deposits and in ledges. The ore of the alluvial deposits has been traced in some cases to small veinlets and vugs in the slate country rock, where it has no visible connection with intrusions of granite or other igneous rock, and in others to well-defined dikes or veins of greisen. This lode ore is associated with granite or other siliceous, igneous, intrusive rocks, that have been altered to true greisen like that occurring in nearly all productive tin regions.

In one case the cassiterite occurs disseminated through a greisen composed of quartz, calcite, fluorite, and lithia mica. In another case the tinstone is intimately associated with tourmaline contained in veins in the granite.

The granites in which tin ore has been found are intruded in limestones of Silurian age in one case and probably of Carboniferous age in another. Similar bodies occur northeastward from York for a distance of 100 miles. Minerals associated with the tin ore in the York region, such as fluorite and tourmaline, have been found in several of these granite areas, and tin ore has been reported from some of them, but its existence outside of the York region has not yet been proved.

Some of the promoters of mining enterprises have expressed a desire to install immediately a complete outfit for milling and smelting tin ore at some point in the York region. The many fiascos resulting from the building of mills and smelters before the extent of ore bodies had been determined are well known to anyone familiar with the history of mining in the United States, so that the folly of this plan is evident. Even after the ore is proved to exist in sufficient quantities for mining a careful study must be made of the ore itself, and of the conditions as affected by climate, wages, fuel supply, and transportation, before either the proper place or method of treating the ores can be determined. The erection of a smelter at present would seem to be ill advised, if for no other reason than because no estimable supply of ore exists. In estimating the value of tin ores in this northern region several facts must be borne in mind. The region is devoid of timber and is accessible by ocean steamers, at the longest, only from the first of June to the end of October. Harbor facilities are poor, and all supplies and wages are high. On the other hand, the construction of railroads and wagon roads would not be difficult, and, if demanded, would require comparatively little outlay of capital.

#### TRANSPORTATION AND FUEL SUPPLY.

In view of the possible developments of tin mining in this region the *questions of transportation and harbor facilities* become important.

The coast line of the York region is not broken by any inlet or harbor suitable for seagoing vessels. Such craft are obliged to lie a safe distance offshore, while landings of freight or passengers are made with lighters or small boats through the surf, as at Nome. During much of the time the sea is smooth and such landings are easy, but frequently violent storms continue for several days, which would destroy lighters and endanger the ships themselves. In fair weather vessels could be loaded in safety from piers, but the possibility of maintaining docking or other loading facilities along this coast is questionable on account of the movement of great ice floes that cover Bering Sea during the long winter.

Port Clarence, the only harbor and safe anchorage for large vessels in Seward Peninsula, is a bay 25 miles southeast of York, and, should the tin deposits be worked on an extensive scale, this harbor is easily accessible. It is a large body of comparatively deep water, nearly circular in outline, and cut off from the sea by a long, low sand spit, which terminates in Point Spencer at the entrance to the bay.

Along the north side of Port Clarence there is a shallow lagoon, separated from the bay by a narrow sand spit. This lagoon extends several miles west of the entrance to Port Clarence. It can be made use of for transporting ore in lighters and small boats. The Coast Survey charts show deep water suitable for large vessels along the north shore near the entrance to the bay, and docks and wharves would naturally be built there. On the south side of the entrance, at Point Spencer, a safe anchorage near shore is made use of as a coaling station by whalers en route to the Arctic Ocean. It is reported that the ice leaves this part of Port Clarence first, at the opening of summer, and that vessels have made use of this anchorage before they were able to approach the coast at Nome. It is therefore possible that Point Spencer might be the most convenient shipping point for the York region. The product of the mines could be brought to the coast of Bering Sea by tramroads or wagons, and, in the summer time, ferried across to Point Spencer, or in the winter hauled over the ice either by traction engines or by horses. Should production be sufficient to warrant it a railroad can easily be built from some point on the north shore of Port Clarence to Lost River and up its valley. Should the mines on Buck Creek warrant the building of a railroad the Lost River line could be extended across the divide at the head of Lost River to Mint River, and thence follow around the northern foothills of the York Mountains to Buck Creek. This road could again be extended from Buck Creek to the locality at Cape Mountain. It would probably not be practicable to build a road along the coast from the mouth of Lost River to York.

During the summer season there is sufficient water in the streams of the region to furnish power for all the machinery required in mining

and concentrating, but, obviously, during the winter this source of power is cut off, and coal or other fuel must be used. In Alaska there are two possible sources of coal for the York region. One of these is near Cape Lisburne,<sup>a</sup> about 200 miles northeast of York, on the shore of the Arctic Ocean. There is reported to be an abundance of coal suitable for steaming purposes at this place, but there are absolutely no harbor facilities and there is no wood available for timbering the mines, and, further, navigation on the Arctic Ocean is possible for only two months of the year; so that these coal beds can not be depended on to furnish a coal supply.

The other source of coal is at Herendeen Bay and Port Moller, about 700 miles to the south, on the Alaskan Peninsula, but this coal has not been sufficiently developed to determine whether it exists in commercial quantities. At the present writing it seems that the only certain sources of fuel for the Seward Peninsula are the coals of the State of Washington and those of British Columbia. On account of the difficulty in obtaining fuel and the cost of labor and subsistence in the Seward Peninsula it does not seem possible that the smelting of tin ore in the York region will ever be successfully accomplished. The ore from this region will necessarily be shipped either to the coal mines in other parts of Alaska, to Puget Sound, or to other points for smelting. The freight on ore shipped from Port Clarence to Seattle would probably be very low, since the large number of vessels carrying freight to Seward Peninsula and St. Michael would desire return cargoes.

In the summer of 1902, 98,822 tons of freight were carried to these points.

#### TIN ORES AND ASSOCIATED MINERALS.

*Physical characteristics of tin ore.*—Cassiterite, tinstone, or tin ore, the dioxide of tin, is the most common form in which tin occurs in nature. It crystallizes in four-sided prisms and octahedrons, but twinning is so common that simple crystals are rarely found. The stream tin of the York region usually occurs in rounded pebbles, its color varying from light brown to black; the color of the streak—that is, of the powdered mineral—is pale gray to brownish. Wood tin is cassiterite that occurs in botryoidal and reniform shapes, with concentric and radiated fibrous internal structure, though very compact. Its color is brownish in varying shades, which give it somewhat the appearance of dry wood. A few specimens of wood tin have been found on Buck Creek. Cassiterite has no distinct cleavage visible to the naked eye. It has about the same hardness as quartz, but is very much heavier, having a specific gravity, when pure, of from 6.4 to 7.02.

<sup>a</sup> Schrader, F. C., A reconnaissance in northern Alaska in 1901: Prof. Paper U. S. Geol. Survey No. 20, 1904, pp. 109-114.

Specimens of the ore mined in the York region, which were tested in this office, gave specific gravities from 5.15 to 6.06. Since cassiterite is heavier than most of its associated minerals, it can usually be separated from them by crushing and panning. The most satisfactory test for cassiterite that can be made in the field is with the blowpipe, as follows: The mineral, crushed and finely powdered, is mixed with about equal amounts of powdered charcoal and soda, and heated gently in the reducing flame. Metallic tin is readily obtained in small globules scattered through the assay, but it is more difficult to collect the metal into one globule, and in attempting it an unskilled operator will usually reoxidize the tin.

Stannite, or tin pyrites, is sulphide of tin, copper, and iron with some zinc. Some varieties contain silver, lead, or antimony. Stannite resembles pyrites and other metallic sulphides, and is not easily distinguished in the field. The blowpipe tests are unsatisfactory, since it is impossible to obtain a tin globule from it. This ore, when pure, contains only 27 per cent tin, and is not mined except in conjunction with other ores. It has been found on Tin Creek in the York region.

#### ASSOCIATED MINERALS.

In the York region the most common minerals accompanying tin are quartz, tourmaline, epidote, garnet, rutile, fluorite, wolframite, magnetite, hematite, limonite, and ilmenite. Of these, tourmaline, garnet, rutile, wolframite, magnetite, limonite, and quartz have often been mistaken for tin ore.

*Tourmaline.*—This is a complex silicate of boron and aluminum. In the York region it occurs in slender three, six, or nine sided prisms, brownish black and bluish black in color. These prisms are often arranged in radiating groups. Tourmaline is distinguished from cassiterite by its crystallization and by its specific gravity, which varies from 2.98 to 3.20. Before the blowpipe the tourmaline of the York region is fusible without fluxing, while cassiterite is infusible.

*Garnet.*—In the York region garnet often occurs in massive, granular aggregates, which greatly resemble tinstone. To the experienced eye they are readily distinguishable by slight differences in color. Garnet has a specific gravity from 3.15 to 4.30; in other words, it is a little more than half as heavy as tinstone. It crystallizes in the isometric system, and never forms elongated prisms. Like tourmaline, it fuses before the blowpipe.

*Rutile.*—Titanium dioxide, or rutile, occurs in crystals, which in hardness, specific gravity, and crystallization resemble cassiterite. The crystals, however, are usually slender prisms, striated or furrowed lengthwise. The streak is pale brown. This mineral has not been found in the ledges, but in alluvial deposits it has often been mistaken for tinstone.

*Wolframite*.—This is an ore of the metal tungsten, a tungstate of iron and manganese. It has a submetallic luster, a grayish or brownish-black color, and a black streak. Its specific gravity is 7.2 to 7.5, a little higher than that of cassiterite, but it is readily distinguished from the latter mineral by possessing a perfect cleavage.

*Epidote*.—This complex silicate of calcium, aluminum, and iron is usually of a yellowish-green color. On Tin Creek it is found in prismatic crystals forming divergent groups resembling the tourmaline, which is also found there. In luster, streak, and hardness it resembles cassiterite, but its specific gravity is 3.25 to 3.50, only a little more than half as heavy as cassiterite. Before the blowpipe it fuses easily, and in the closed tube gives water.

*Magnetite and limonite*.—These ores of iron are found in the placers associated with stream tin. They are often mistaken for tin ore, but are readily distinguished by the practiced eye. Magnetite can be distinguished by the use of a magnet, while the red or brown streak of limonite serves to separate it from the tin ore.

*Fluorite*.—This mineral, commonly known as fluorspar, occurs in the bed rock associated with the tin ore wherever found in the York region. It is a simple chemical combination of fluorine and calcium, crystallizing in cubes and having a vitreous luster and usually a white, wine-yellow, greenish-blue, or violet-blue color. Its specific gravity is from 3.01 to 3.18. It is easily scratched with a knife, its hardness being about equal to that of calcite, from which it is distinguished by its cubic crystallization and failure to effervesce with hydrochloric acid.

*Quartz*.—In varying amounts quartz is also associated in the bed rock with the tin ore. Usually it is readily distinguished from the cassiterite, but instances were common last summer where prospectors had mistaken a dark-colored, smoky quartz in small grains for cassiterite. The specific gravity of quartz is 2.65 to 2.66, so that by the panning test the quartz can readily be separated. In powdered form smoky quartz and cassiterite resemble each other so much that the blowpipe test is often required to distinguish them.

#### METHODS OF ASSAYING TIN ORE.

Accurate assays of tin ore by ordinary methods are difficult on account of the readiness with which the tin combines with the various gangue minerals, forming silicates and stannites, which pass off with the slag.

Nearly all writers on the subject of tin assays recommend that only rich ores, practically almost pure cassiterite, be treated by fire assay. Stream tin is ordinarily pure enough to give an approximately accurate result without further concentration, but lode ore, associated as it is



with gangue minerals, must be concentrated. Without such treatment it is impossible to obtain even an approximate estimation by the dry method usually employed, and in an ore containing less than 10 per cent it is probably impossible to obtain any tin at all. A study of the literature regarding tin analyses has convinced the writer that the reports of dry assays of low-grade tin ores, in which the cassiterite can not be recognized by the naked eye or separated by hand panning, are of no value.

For assaying<sup>a</sup> the ore is first pulverized and screened to uniform size, care being taken in the crushing to prevent the formation of slimes, since cassiterite is very brittle. The pulp is then roasted in a muffle to decompose any sulphides and arsenides that may be present. After roasting, and while still hot, it is thrown into cold water, which finely subdivides the ore and exposes a much larger surface to the action of acids. The ore is then boiled with nitrohydro-chloric acid to remove all soluble metallic compounds. This boiling must be continued until iron ceases to dissolve. The ore is then washed with hot water, transferred to a gold pan, and washed free from visible impurities. The ore thus prepared for assay may be treated by either of the two following methods, the first being preferred:

The finely pulverized ore is mixed with five times its weight of chemically pure potassium cyanide, then fused in a clay crucible in a bright fire. A steady fusion is kept up for from 10 to 15 minutes at the highest point to which potassium cyanide can be heated without showing heavy fumes.

Five grams of KCN are rammed into the bottom of the crucible. The charge, consisting of 10 grams of ore mixed with 40 grams of potassium cyanide, is then poured into the crucible, and 5 grams of KCN placed on top of the charge.

A "G" Battersea or Denver crucible may be used for pot-furnace work, and a "B" or 20-gram Colorado crucible will probably do for muffle work.

The following charge is said to be taken from Kerl and Balling.<sup>b</sup>

Five grams of ore are intimately mixed with 0.75 to 1 gram of charcoal dust and charged into a clay crucible. On top are placed 12.5 to 15 grams black flux <sup>c</sup> (or substitute) with 1 to 1.25 grams borax glass, then a salt cover, and finally a piece of charcoal. The crucible is covered, heated in a muffle or a pot furnace at a moderate gradually increasing temperature until the boiling has ceased, and then from one-half to three-fourths of an hour at a white heat. The crucible is removed from the fire, broken when cool, and the tin button weighed.

The salt cover should be about one-fourth inch thick. It would seem that finer charcoal would cover the charge as well as a single piece, for the object is to keep the charge in a reducing atmosphere. These methods are found to give within 0.5 per cent of the results of wet assays when used with well-cleaned minerals.

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<sup>a</sup> Hofman, H. O., The dry assay of tin ores: Trans. Am. Inst. Min. Eng., vol. 18, 1890, pp. 3-54.

<sup>b</sup> Kerl, Metallurgische Probirkunst, Leipzig, 1882, p. 412. Balling, Die Probirkunde, Brunswick, 1879, p. 391.

<sup>c</sup> Black flux is 1 part niter ( $\text{KNO}_3$ ) and 3 parts argol, deflagrated. Black flux substitute is 2 parts potassium carbonate or sodium bicarbonate and 1 part flour.

All ores must be crushed and carefully concentrated by sizing and panning. For a prospector's field test of ore supposed to carry a small percentage of tin, a practical method would be to crush the supposed tin ore in a hand mortar and concentrate by panning, after which the concentrates can be roasted and cleaned with a magnet and the residue tested with a blowpipe, as has been described.

As small globules of tin, such as are obtained by the blowpipe, are sometimes unsatisfactory, more metal can be reduced by simple means. While at Teller this seemed desirable, and an old teacup was lined one-fourth inch thick with a paste of powdered Wellington coal and baked. The finely pulverized ore was mixed with an equal bulk of powdered coal and twice as much ordinary baking soda; this charge was placed in the cup and covered one-half inch deep with powdered coal and heated for forty-five minutes in an ordinary cook stove with as hot a fire as possible. Although the cup broke upon attempting to remove it from the fire, good-sized buttons of tin, as large as a pea, were obtained. After determining the presence and the relative value of the washed cassiterite, pan assays will be found sufficient for further tests.

Greater accuracy in the assay of tin ores is obtained by wet analysis. Such analyses of eight samples of low-grade tin ores from the Seward Peninsula were recently made in the laboratory of the United States Geological Survey. These ores contained no visible crystals of cassiterite, and were treated without mechanical concentration. The following note in regard to the wet method of analysis is furnished by Mr. Eugene C. Sullivan, of the United States Geological Survey:

The method used in detecting traces of tin was as follows: Two grams were roasted in platinum crucible, fused with potassium bifluoride ( $\text{KHF}$ ), and the melt was twice evaporated with concentrated sulphuric acid ( $\text{H}_2\text{SO}_4$ ) to insure absence of hydrofluoric acid ( $\text{HF}$ ). The mass was taken up with dilute sulphuric acid ( $\text{H}_2\text{SO}_4$ ), in which practically all dissolved. The solution was decanted from any slight residue, which was fused as before with potassium bifluoride ( $\text{KHF}$ ) and after driving off hydrofluoric acid ( $\text{HF}$ ) by means of sulphuric acid ( $\text{H}_2\text{SO}_4$ ) added to the main solution. The solution was nearly neutralized with ammonium hydroxide ( $\text{NH}_4\text{OH}$ ), and hydrogen sulphide ( $\text{H}_2\text{S}$ ) was passed through it for several hours. The precipitate was digested for some time with yellow ammonium sulphide, being warmed slightly. The insoluble residue was filtered out, the filtrate acidified slightly with sulphuric acid ( $\text{H}_2\text{SO}_4$ ), and hydrogen sulphide ( $\text{H}_2\text{S}$ ) was passed to insure complete precipitation of stannic sulphide ( $\text{SnS}_2$ ). The precipitate was filtered out and ignited, again fused with potassium bifluoride ( $\text{KHF}$ ), evaporated with concentrated sulphuric acid ( $\text{H}_2\text{SO}_4$ ), taken up with dilute sulphuric acid, stannic acid ( $\text{H}_2\text{SnO}_3$ ) precipitated with ammonium hydroxide ( $\text{NH}_4\text{OH}$ ), the precipitate dissolved in hydrochloric acid, any residue filtered out, the solution neutralized with ammonium hydroxide ( $\text{NH}_4\text{OH}$ ) and hydrogen sulphide ( $\text{H}_2\text{S}$ ) passed for some hours.

Where the tin was present a yellow precipitate of stannic sulphide ( $\text{SnS}_2$ ) separated, apparent on allowing the solution to stand for some time. To obtain an idea of the amount of tin present this precipitate, after thorough washing, was ignited and weighed as stannic oxide ( $\text{SnO}_2$ ).



## OCCURRENCES OF TIN ORE IN THE UNITED STATES.

The total amount of metallic tin produced from ore mined in the United States has not exceeded 200 tons, though small amounts have been found in no less than 17 States and Territories: Alabama, Alaska, California, Colorado, Connecticut, Georgia, Idaho, Maine, Massachusetts, Missouri, Montana, New Hampshire, North Carolina, South Dakota, Texas, Virginia, Wyoming.

In Alabama, cassiterite occurs in quartz veins in graphitic schists<sup>a</sup> near granite, and as disseminated grains in gneiss.

In California<sup>b</sup> small amounts of float cassiterite have been found in the gold placers at a number of widely separated localities. The ore is found in places at the Temescal mine, 5 miles southeast of Riverside. At this place there is an area of hornblendic biotite-granite over 2 miles in diameter which is cut near its borders by dikes of highly quartzose and feldspathic fine-grained granite. The ore occurs in veinlets of tourmaline and quartz aggregates which run northeast and southwest through the granite. A great body of such vein matter, covering an area 300 by 250 feet, and 25 to 30 feet high, crops out in the Cajalco Hill. What is known as the Cajalco vein courses northeast from this outcrop, and the workings extend for 1,100 feet along it. The vein is sinuous, and varies from a minimum of a clay seam to a maximum of 8 feet. There is always a clay gouge on one and often on both walls. Two hundred and ninety-one and fourteen one-hundredths pounds of metallic tin were produced from ore mined at Temescal previous to 1892, when the mines were abandoned.

In the Carolinas a tin belt<sup>c</sup> extends in a northeast-southwest direction for about 31 miles, and lies partly in North Carolina and partly in South Carolina. Tin ore is not evenly distributed through this distance, though the tin-bearing formation, which consists of crystalline schists or gneisses containing pegmatitic dikes, is continuous. The rocks of the tin belt are very much decomposed, and the pegmatite dikes are very thoroughly kaolinized. The tin ore has been found loose in the soil, in the gravels, in boulders of quartz and mica, and occasionally in the pegmatite dikes. The most promising deposit in the belt is at the Ross mine, near Gaffney, S. C., from which 38,471 pounds of the ore were shipped in 1903.

In Colorado tin ore has been reported near Golden, but little is known of its occurrence.

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<sup>a</sup>Phillips, Wm. B., Geol. Survey of Alabama, Bull. No. 3, 1892.

<sup>b</sup>Sixth Ann. Rept. California State Min. Bureau, Sacramento, 1886. Eleventh Ann. Rept. California State Min. Bureau, Sacramento, 1893. Fairbanks, Harold W., Tin deposits at Temescal: Am. Jour. Sci., 4th ser., vol. 4, 1897, pp. 39-42. Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, p. 536.

<sup>c</sup>This note is furnished by Joseph Hyde Pratt in advance of Economic Paper No. 8 of the North Carolina Geological Survey on "Carolina tin deposits."

In Connecticut tin ore has been found at Haddam, but only as a mineralogical curiosity.

In Georgia tin ore has been reported from Lumpkin County as occurring in granite and chlorite schists, with minute quantities from the gold washings.

In Idaho a few specimens of stream tin have been found on Jordan Creek, in the southwestern part of the State, and in the Coeur d'Alene district.

In Maine<sup>a</sup> cassiterite occurs at Winslow in small veins, which traverse impure limestone, with purple fluorite, mica, quartz, and mispickel. These veins have been prospected to a depth of 100 feet, but have yielded no tin in commercial quantities. Similar occurrences are reported at Paris and Hebron.

In Massachusetts a few crystals of cassiterite have been found with albite and tourmaline at Goshen and Chesterfield.

In Missouri<sup>b</sup> a small amount of cassiterite has been found replacing sphene in granite.

In Montana<sup>b</sup> stream tin has been found in Prickly Pear, French Bar, and Ten Mile creeks, in the "Basin" in Basin Gulch and in Peterson Creek. Light-brown, rounded pebbles of wood tin associated with topaz crystals have been found at one locality.

In New Hampshire cassiterite was found at Lynn and Jackson in 1840 by Doctor Jackson. It occurs with arsenical and copper pyrites, fluorspar, and phosphate of iron in small quartz veins, and mica, slate, and granite near a trap dike.

In South Dakota<sup>c</sup> the Black Hills contain noteworthy deposits of tin ore, which, however, have not yet proved commercially productive. They occur in an area of coarse-grained granite in the central part of the hills. The Etta mine deposit, the only one that has produced any considerable quantity of tin, is a lenticular body of pegmatitic granite, which consists of quartz, feldspar (albite), lepidolite, and spodumene in individuals of great size, up to 8 or 9 feet in dimensions. Cassiterite occurs in association with lithia mica and is accompanied by columbite and tantalite, with which it is apt to be confused. The mine was sold to an English company, which erected a 250-stamp mill, but the ore did not prove profitable to work, and after the first run, which produced 9,385 pounds of tin, the work was closed.

In Texas<sup>d</sup> tin has been discovered in quartz veins occurring in greisen granite in the Franklin Mountains near El Paso, and one small crystal

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<sup>a</sup> Jackson, C. T., On the discovery of a new locality for tin ore in Winslow, Me.: *Proceedings Boston Soc. Nat. Hist.*, vol. 12, 1869, p. 267. Hunt, T. S., Remarks on the occurrence of tin ore at Winslow, Me.: *Trans. Am. Inst. Min. Eng.*, vol. 1, 1873, p. 373.

<sup>b</sup> Raymond, R. W., *Trans. Am. Inst. Min. Eng.*, vol. 1, 1873, p. 374.

<sup>c</sup> The writer is indebted to Mr. S. F. Emmons for the note on tin in South Dakota.

<sup>d</sup> Dumble, E. T., *Second Ann. Rept. Texas Geol. Survey*, 1890, pp. 595, 690, 713.

has been found at another locality. At El Paso,<sup>a</sup> wolframite occurs with the ores, and feldspar is replaced by cassiterite.

In Virginia<sup>b</sup> good tin prospects have been found on the headwaters of Irish Creek, Rockbridge County, in quartz lenses and stringers in granite, which itself is intrusive in metamorphic schists. Associated minerals are wolframite, mispickel, iron pyrites, quartz, and beryl, with small amounts of siderite, limonite, chlorite, muscovite, damourite, and fluorspar.

In Wyoming,<sup>c</sup> at Nigger Hill, in the northwestern portion of the Black Hills, cassiterite has been found in a granitic area that is similar in geological association to that at the Etta mine.

#### CONDITIONS AND METHODS AT THE LARGE TIN MINES OF THE WORLD.

Since the tin from newly discovered sources must come into competition with the product of established mining districts, a comparison with the mining conditions in the older districts will be useful in estimating the value of the newer ones. For this purpose the following notes have been compiled from the most recent publications on the tin deposits of the world, and a brief bibliography of these is presented on pages 55-56.

The greater part of the world's supply of tin is obtained from alluvial deposits. Over three-fourths of it comes from alluvial deposits in the Malay Peninsula, otherwise known as the Straits Settlements, and the islands of Banca and Billiton, off the north coast of Sumatra, the former region producing about half of the tin of the world. A large amount is produced from alluvial deposits in Australia, while in Cornwall, Saxony, and Bolivia most of the tin ore is obtained from vein deposits in the bed rock.

#### MALAY PENINSULA.<sup>d</sup>

The Malay Peninsula, in which the Straits Settlements tin deposits are located, consists of a central axis of rugged hills running north and south, with occasional subordinate or diverging axes and isolated peaks. The whole region is covered by a jungle of tropical vegetation so dense that the roads and trails have to be hewn through. In the tin regions the main range is composed of granitic rocks, occasionally cut by feldspathic and other dikes, while in some places are found gneissic and schistose rocks, with occasional areas of a white, highly crystalline limestone.

Tin ore occurs in nearly every part of the western side of the Malay

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<sup>a</sup> Weed, W. H., The El Paso tin deposits: Bull. U. S. Geol. Survey No. 178, 1901.

<sup>b</sup> Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, pp. 523-525.

<sup>c</sup> Rolker, C. M., cit., p. 530.

<sup>d</sup> The following notes regarding the Malay tin deposits are taken almost verbatim from R. A. F. Penrose, *Tin deposits of Malay Peninsula*: Jour. of Geol., vol. 11, 1903, pp. 135-154.

Peninsula for a distance of 900 miles, but the principal mining district is located about 300 miles northeast of Singapore, and is known as the Kinta district. The district comprises a more or less inclosed valley about 40 miles in length, extending in a north-south direction, about 30 miles in width at its south end and about 5 miles wide at its north end. The valley includes some lower mountains and areas of limestone, surrounded and partly covered with great tracts of alluvium. Much of this alluvium contains oxide of tin, or cassiterite, in particles and fragments of varying size, forming what might be termed "tin placers," in which the tin occurs in different ways. Sometimes it is scattered through it from top to bottom in comparatively uniform quantities; sometimes it is in layers or pay streaks separated by barren ground; sometimes it is richest on the bed rock. As a general rule, however, there is a covering or "overburden" of barren alluvium from 10 to 40 feet or more in thickness above the tin ground. The best ground occurs immediately at the foot of the mountains. Higher up it is often richer, but of small extent, while farther away it is thicker, but of lower grade. The ordinary tin-bearing beds vary from 1 to 30 feet in thickness, though sometimes they reach over 100 feet. In one instance the tin-bearing formations extend from the surface down to a depth of from 5 to 30 feet, without any barren overburden. In another instance large open pits in the alluvium of the river valley show tin-bearing strata, varying from 2 to 10 feet in thickness, with a barren overburden about 40 feet in thickness. In another instance the overburden is from 30 to almost 40 feet in thickness, and the tin-bearing ground below has been penetrated 140 feet vertically without reaching the bottom. In the mountains near its source the ore is angular and in comparatively large fragments, sometimes from an inch to a foot or more in diameter. Farther down the hill it becomes more and more rounded and finer in grain.

Most of the mines are operated by Chinamen, and the labor is performed by coolies from southern China. The tin-bearing alluvium is worked mostly in open cuts or large pits, except where the covering or overburden is very thick, when shafts are sunk to the tin stratum. The average depth of the working is about 40 feet, and the greater depth can not ordinarily be reached on account of water in the pits. It is a common thing to see water raised from these pits by a rude treadmill pump worked by the feet of Chinese laborers.

The pay gravel dug from the bottom of the pit is carried up an incline to the surface in baskets hung on either end of a stick carried on the back of a Chinaman. It is then dumped into wooden troughs, supplied with running water, and, if necessary, stirred with a shovel until washed into the sluice boxes. These boxes are from a few feet to several hundred feet in length, and are built of wood or cut in the sandy clay of the region. In the description of them no mention is

made of riffles being used. After running for some time, the water is shut off and the material in the boxes is cleaned up. This material is further concentrated by hand panning in flat wooden bowls, which resemble the American gold pan. The final process is cleaning by hand picking, by which the magnetic iron and other impurities are removed. Ore treated in this way will average from 60 to 70 per cent tin. In one instance hydraulic monitors are used, but the greater part of the tin ore from this region is produced by the more primitive methods.

#### BANCA.

In the island of Banca,<sup>a</sup> which is under the Dutch Government, the geological conditions resemble those of the Malay Peninsula. The bed rock consists of granite masses flanked by Silurian slates. Tin ore has been found occurring as impregnations in the granite and also as veins in the slate, but these deposits are not worked. The tin wash consists mainly of fragments of granite, "schorl,"<sup>b</sup> and sandstone. The bed rock nearly always consists of granite more or less decomposed. A section of an average stream-tin deposit shows above the bed rock 3 feet of tin-bearing gravel, overlain by red sand, followed by red clay, then coarse sand with pockets of clay, layers of fine sand with a little fine tin ore. The average overburden is from 25 to 35 feet; shallow diggings are prospected by pits, deeper ones by systematic borings. In 1891 and 1892, according to the United States Bureau of Statistics, 7,982 men were employed in the mines of Banca and produced 5,753 tons of tin, a yearly product per man of seventy-two one-hundredths of a ton. There is water for working in the lower valley diggings but eight months each year, and for only five months in the upper diggings.

#### BILLITON.

In Billiton, also under the Dutch Government, the geologic conditions resemble those in Banca. There are granite masses surrounded by quartzites, schists, and slates of Silurian age. Some tin is obtained from ledges that occur both in the granite and in the quartzite, but the greater part of the tin comes from alluvial deposits. In 1891-92 8,690 men were employed here, the output averaging per man a little over seven-tenths of a ton of tin. The prospecting is done very systematically, and is in charge of a corps of European engineers who test the fields in advance of the mining operations by boring first at intervals of, say, 100 yards, and supplementary holes are made from 20 to 25 yards apart to ascertain the course, average thickness, and

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<sup>a</sup> Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1896, p. 484.

<sup>b</sup> "Schorl" is an old name for rocks composed mainly of tourmaline and quartz.

character of the pay gravel. The contents of each hole is carefully washed and the tin ore weighed, and from these results calculations as to the probable yield of the ground are made. On the basis of this estimate the fields are let to Chinamen.

#### AUSTRALIA.

In Australia tin ore has been found very widely distributed, and is mined in New South Wales, Queensland, South Australia, Tasmania, Victoria, and West Australia. The occurrences present considerable variety, and both alluvial and vein deposits have been worked, though the greater part of the tin is produced from alluvial deposits. The two best-known localities of stream tin are Vegetable Creek in New South Wales, and Bischoff Mountain in Tasmania.\* All the tin gravels of Vegetable Creek are derived from masses of granite that are permeated by numerous tin veins. The width of the channel deposits of this creek varies from 5 to 15 chains, or from 330 to 990 feet, but the richest portions are reported to be from 1 to 5 chains wide. The average thickness of the deposit is reported to be 7 feet, while the thickness of the pay gravel averages  $2\frac{1}{2}$  feet. The average yield per cubic yard of pay gravel is said to be about 20 pounds of tin ore, equal to about 0.8 per cent. In this district the mining is done by hydraulic monitors and other modern mining appliances.

The tin deposits of the Mount Bischoff region in Tasmania are largely residual gravels derived from decomposition in situ of the bed rock. The bed rock of this mountain consists of Paleozoic clay slates and quartz, and to a less extent of sandstones and dolomites. The slates are traversed by numerous veins of quartz-porphyry. The porphyry and also the slates have undergone great transformations, so that all of the original feldspar and mica, as well as the primary quartz, have been replaced by topaz, tourmaline, secondary quartz, tinstone, and to a less extent by fluorspar, arsenious pyrites, and magnetite. The gravels are sometimes astonishingly rich in tin. In one instance 240 tons of concentrated ore were taken from an area of 66 square feet. Masses containing 6 hundredweight, almost free from the matrix, have been found. The accumulation of tin ore in the gravel is exceedingly patchy, as might be expected in deposits of this nature. Frequently within 60 feet of the richest deposits the wash dirt is found to contain only traces of tin. The ore is first concentrated by sluicing, then crushed and further concentrated; 5,500,000 tons of material handled previous to 1899 is reported to have yielded 44,560 tons of black tin, or 0.81 per cent of the total material treated. The value of a ton of gravel probably averaged about 6s. 10d., or \$1.70. The total cost of mining, crushing, dressing, and bagging the concentrates amounted to 4s.  $2\frac{1}{2}$ d.,

\* Bolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, p. 497.



or about \$1.05 per ton, and the dressing and smelting was covered by a yield of 0.5 per cent tin oxide, equal to about 10 pounds of black tin per ton."

Nearly all the ore obtained in Tasmania is smelted at the Mount Bischoff Company's smelting works in Launcester, Tasmania.

#### CORNWALL.

The tin-bearing district of Cornwall<sup>b</sup> is at the extreme southern end of England and has a length of about 100 miles and a width of from 10 to 30 miles. The bed rock consists of metamorphosed clay slates, called "killas," of Devonian age, intruded by large masses of granite. Both the granite and the slates are cut by dikes of quartz-porphyry, called "elvan courses," whose outcrops form a fringe around the granite areas. Five granite areas of this kind are shown on geological maps of the region, while the Scilly Islands, about 20 miles to the southwest, form a sixth.

The tin gravels of Cornwall were exploited as early as Roman and Grecian times, when the British Islands were called Cassiterides. At present the original tin-bearing gravels have long been exhausted and abandoned. What is called "stream working" at the present day is merely the extraction of tinstone from the tailings of the stamp mills collected in the valley depression. In 1894 about 6 per cent of the total tin production of Cornwall came from the washing of these poor slimes.

The tin-bearing lodes of Cornwall have been worked for many years and afford the best examples of lode mining for comparison. These lodes occur in the granites, slates, or elvans, or in the contacts between them. Nearly all of the mineral wealth occurs within 2 or 3 miles on either side of the boundaries between the slates and the granite.

The granites, especially in their outer portions, are usually more or less altered, and the name greisen is often applied to them. Typical greisen consists principally of quartz and lithia mica, with tourmaline, zircon, topaz, fluorite, and cassiterite in small amounts. In some cases the rock consists very largely of tourmaline and quartz, with fluorite in varying quantities.

The common minerals associated in the veins with the cassiterite are quartz, feldspar, chlorite, and tourmaline, with fluorite, lepidolite, topaz, copper pyrites, and copper glance in varying proportions. Several of the mines have produced both copper and tin ores, and in some cases mines which were opened as copper mines have become tin mines in depth by a gradual increase in the amount of tin ore and corresponding decrease in copper ore.

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<sup>a</sup> Rolker, C. M., Production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, p. 505, quoted from Min. Res. of Tasmania, Nov., 1894.

<sup>b</sup> De la Beche, H. T., Report on the geology of Cornwall, Devon, and West Somerset, with map: *Geol. Britain Geol. Survey*, London, 1839.

The metalliferous contents of the tin-bearing lodes appear to be affected not only by the mineral composition of the contiguous rocks, but also, in some degree, by their position and mechanical structure. Whether the rock be granite, slate, or elvan the hardest portions are always quartzose, and in these the lodes are seldom rich.

If, on the contrary, the grain of the rock be neither very fine on the one hand, nor particularly coarse on the other, while the inclosed crystals of feldspar have a greenish, brownish, or pinkish tint and indistinct outlines, quartz, mica, and sometimes schorl being present, the appearance of the rock is considered to be favorable, and lodes inclosed in it may be expected to be fairly productive, especially of tin ore.<sup>a</sup>

The lodes which afford lead ores occur in the slates, usually at some distance from the granite, while the lodes which cut both slate and granite, though they carry both tin and copper, are usually richer in copper where the walls are slate, and richer in tin where the walls are granite.

The walls of the tin-bearing veins are seldom well defined, and generally the ore is disseminated through the wall rock on one side or the other, so that at some distance away from the veins it is rich enough to work. This is especially common when the vein is inclosed in granite, but also happens in the slates and elvans.

All Cornish tin ores can not, however, be distinctly connected with veins. In some instances the deposits are stockworks which consist of a mass of granitic or other rock traversed by a network of small veins interlacing with one another and running through the rock in various directions. Other large deposits in Cornwall, known as "floors" or "carbonas,"<sup>b</sup> are usually connected with well-defined lodes, though in some cases they are surrounded by hard granite and apparently unconnected with any lode or vein. Enormous deposits of this kind have been found in the workings of the St. Ives Consols mine. The Standard lode at this place has been worked to a depth of nearly 200 fathoms and has in the aggregate been very productive, though it does not average more than  $4\frac{1}{2}$  feet in width. Several large carbonas have been found branching off from this lode at various levels, and many of the workings are in the form of enormous caverns from 60 to 75 feet high and equally wide.

The Dolcoath<sup>c</sup> mine is one of the best known of the Cornish tin mines, and in 1902 the lodes had been traced for over 2 miles, while the workings had reached a vertical depth of about 2,100 feet and were still producing large amounts of ore. The main lode of Dolcoath

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<sup>a</sup> Phillips, J. A., and Louis, Henry, *A treatise on ore deposits*, Macmillan & Co., London, 1896, p. 108.

<sup>b</sup> Phillips, J. A., and Louis, Henry, *Idem*, p. 169.

<sup>c</sup> Frecheville, R. J., Great main lode of Dolcoath: *Trans. Royal Geol. Soc. Cornwall*, vol. 10, 1887, pp. 146-156.



varies in width from 12 inches to 27 feet and is richest in tin in the deepest levels, where the ores sometimes average 10 per cent cassiterite. The richest ore occurs where a number of veins intersect and is said to be of a compact, bluish rock, consisting of a mixture of chlorite, quartz, and tourmaline, with stringers of cassiterite running through it. On the north side it passes gradually into a barren granite. From its upper workings, which are in the slate, this mine yielded only copper ores, but from the deeper levels mined at the present time, which are in the granite, only tin ores are obtained.<sup>a</sup>

The average richness of the ore from a number of Cornish mines for ten years, from 1871 to 1881, is given in pounds of black tin per ton, as follows: Dolcoath, 59 pounds; Cook's Kitchen, 43 pounds; Tincroft, 53 pounds, and Carn Brea, 35 pounds.<sup>b</sup> This is approximately equivalent to 1.8 per cent, 1.3 per cent, 1.6 per cent, and 1 per cent, respectively, in metallic tin. During the half year ending December 31, 1902, the average product of the Dolcoath mine was 38.28 pounds black tin per ton, approximately equivalent to 1 per cent, while during the year ending April 24, 1903, the product of the Wheal Grenville Mining Company at Camborne averaged 43.6 pounds black tin per ton,<sup>c</sup> approximately equivalent to 1.1 per cent in metallic tin.

Many examples showing the nature of occurrence and extent of the tin ledges of Cornwall might be cited for comparison, but those given above will probably be sufficient for present purposes, and will show the general resemblance of the occurrence of tin ore in the York region and in Cornwall.

#### BOLIVIA.

The tin mines of Bolivia occur in veins that are regarded as exceptional in that the tin ore is intimately associated with silver ores, bismuth ores, and various sulphides, while the gangue includes barite and certain carbonates. The deposits often occur in trachytes and andesites erupted during Cretaceous or Eocene time.

#### REDUCTION OF TIN ORES.<sup>d</sup>

Tin ore is prepared for smelting by roasting, if necessary, then crushing and concentrating to at least 60 per cent cassiterite. This may be done with ordinary stamp mills and concentrating machinery. In Cornwall both gravity and steam stamps are used.

The earliest and simplest method of smelting was as follows: A hole, about 2 feet in diameter, was dug in the earth, preferably in a bank, in which sticks of wood and well-cleaned ore were piled in alternate

<sup>a</sup>Phillips, J. A., and Louis, Henry, *A treatise on ore deposits*, Macmillan Co., 1896, p. 211.

<sup>b</sup>Frecheville, R. J., *Great main lode of Dolcoath*: *Trans. Royal Geol. Soc. Cornwall*, vol. 10, 1887, p. 154.

<sup>c</sup>Newland, D. H., *Tin, the mineral industry*, vol. 11, 1903, p. 595.

<sup>d</sup>Louis, Henry, *The metallurgy of tin*: *Mineral Industry*, vol. 5, 1896, pp. 533 to 588.

layers and burned; the tin was thus reduced, dropping or flowing to the bottom of the hole. Remains of many such rude furnaces have been found in Cornwall. Afterwards, bellows were introduced to force the fire, and still later charcoal was added. In some parts of the Malay Peninsula small amounts of tin are produced by reducing in this manner, charcoal being used without artificial draft.

For a long while the shaft furnace was used, but it is now almost entirely superseded by the reverberatory furnace. An average furnace of this kind has about the following dimensions: Bed, 10 by 17 feet; fire bridge, 2 by 6 feet; space below fire arch, 3 feet, and below fire bridge, 15 inches. The bed of the furnace is built over a hollow vault and with the hollow fire bridge is cooled by allowing the air to circulate freely beneath it.

In Singapore water has been used below the bed to catch the tin that leaks through, since the metal is very fluid at the high temperature of the smelter.

The bed has a depth of about 6 inches and slopes from all three sides to the tap hole at one end. Opposite the tap hole is a charging door, and there are openings for working the charge at both ends of the furnace. The average charge is about 2 tons of concentrated ore, mixed with from 15 per cent to 20 per cent of powdered anthracite, a small amount of slaked lime, according to the quality of the ore, and sometimes a little fluorspar.

A good heat is raised and the charge kept in a reducing atmosphere at about the temperature of melting cast iron, and after several rabblings is drawn off at the end of from five to seven hours. At Penzance, Cornwall, 16 men working twelve-hour shifts run four such furnaces.

The tin from the reverberatory furnace must be refined, and after it is run into molds it is placed in a liquating furnace, an inclined table under which a fire is built, which raises the temperature just above the melting point of tin. The tin trickles slowly through the tap hole into the "float" or tank for the molten metal, leaving unmelted the more infusible substance in the form of "hardheads," which are alloys of tin with baser metals, such as copper and iron, and these are refined by other methods. The molten tin in the float is allowed to settle a few hours, after which wood is forced down beneath the molten mass, and the steam and gases formed create a strong ebullition. Bismuth, lead, arsenic, and other impurities, and some tin are oxidized and float as a scum on top and are skimmed off to be smelted again with the slags. The same result is accomplished by dipping up the tin in ladles and pouring it back from a height of 2 or 3 feet, but this involves more labor and seems to possess no advantage over boiling.

After boiling, the tin is allowed to settle for two or three hours, and then the uppermost part is ladled into molds and sold as refined tin,

the middle portion is sold as block tin, and the lowest portion must be further refined. Average English refined tin is from 98.64 to 99.76 per cent pure. The cost of refining tin in the Straits Settlements is said to be about \$12 per ton of 2,000 pounds. There is always some loss in smelting tin; slags from the furnace seldom contain less than 5 per cent, and the average loss in smelting is said to be about 9 per cent.

PRODUCTION AND VALUE OF TIN IN 1902-3.

During the years 1902 and 1903 the total world's production of tin is estimated at 90,233 and 92,536 long tons, respectively, as shown by the following table. <sup>a</sup>

*Production of tin, estimated on trade statistics.*

	Long tons.		Changes.	
	1902.	1903.	Increase.	Decrease.
Straits (Malay Peninsula) .....	54,062	54,797	735	.....
Australia.....	3,500	4,991	1,491	.....
Banca .....	14,978	15,070	92	.....
Billiton .....	3,951	3,653	.....	298
Bolivia .....	9,000	9,500	500	.....
Cornwall, England.....	4,392	4,150	.....	242
Miscellaneous .....	350	375	25	.....
Total .....	90,233	92,536	2,843	540
Net increase, 2,303 long tons.				

Of this total production only about 30 tons were mined in the United States.

The total consumption of tin in the United States approximated 39,000 tons, or 43 per cent of the world's output. The production of tin last year, as in fact for several years past, has hardly exceeded the consumption, and from some of the older districts, especially Banca and Billiton, there are signs of a diminution in the output. The average price of tin in New York for 1903 was 28.09 cents per pound, or about 1½ cents per pound higher than for 1902. The price varied during the year from 25.42 cents to 30.15 cents per pound. The total amount of tin consumed in the United States was worth at market prices over \$24,500,000.

VALUE OF TUNGSTEN AS A BY-PRODUCT.

Tungsten ores in the form of wolframite occur in association with the tin ores in several places in the York region. At present prices these ores in the York region evidently have no commercial value, but

<sup>a</sup>Tin in 1903, Eng. and Min. Jour., vol, 77, Jan. 7, 1904, pp. 18-20.

considering the difficulty which may arise in separating wolframite from cassiterite the following information will be of interest:<sup>a</sup>

Since the latter part of 1903 there has been a very large increase in the demand for tungsten, and it is probable that from October 1, 1903, to October 1, 1904, will see the marketing of about 1,000 tons of tungsten minerals. Where the tungsten mineral is an associate of some other economic mineral that is being mined it should be a valuable by-product. Its value varies with the percentage of tungsten oxide and has been about \$100 per ton for a 55 to 60 per cent ore. As an associate of tin ore it should be of value as a by-product, and could be separated from the tin mineral by an electro-magnetic separator.

As the demand for tungsten is limited there could readily be an overproduction, with a corresponding reduction in price.

#### BIBLIOGRAPHY.

The following are a few of the more important papers relating to the tin deposits in various parts of the world which may be useful for comparative purposes in estimating the value of the tin deposits of Alaska:

BECK (RICHARD). *Lehre von den Erzlagerstätten*, Berlin, 1901. Second edition, 1903.

Contains descriptions of the occurrence and method of mining tin ore, both in alluvial and in lode deposits, in various parts of the world, and discusses the origin of tin ore.

BLAKE (W. P.). Tin ore veins in the Black Hills, and columbite and tantalite in the Black Hills: *Trans. Am. Inst. Min. Eng.*, vol. 13, 1885, pp. 691-697.

Structure of the Etta vein; percentage of black tin in the ore; minerals associated with the ore; extent of the tin region.

CLAYPOLE (E. W.). The tin islands of the Northwest: *Am. Geol.*, vol. 9, 1892, pp. 228-236.

Describes the structural characteristics of the igneous and sedimentary rocks that form the Black Hills and the movements of elevation and subsidence that have occurred in the region. The cassiterite is confined to the granite veins, and is very finely and irregularly disseminated.

DAVID (T. W. E.). Geology of the Vegetable Creek tin-mining fields of New England district, New South Wales: *Geol. Surv. New South Wales*, 1887, pp. 4-169.

Minerals associated with tin ore; methods of mining stream tin; tin occurs both in recent gravels and in old channels covered by basalt flows; lodes from which the Vegetable Creek tin has been derived; average thickness, extent, and richness of the alluvial deposits.

EMMONS (S. F.). Geological distribution of the useful metals in the United States: *Trans. Am. Inst. Min. Eng.*, vol. 22, 1893, pp. 71-72.

Describes the geologic occurrence of tin in various parts of the United States.

FAIRBANKS (H. W.). The tin deposits at Temescal, southern California: *Am. Jour. Sci.*, 4th ser., vol. 4, pp. 39-42, 1897; *Min. and Sci. Press*, vol. 75, 1897, p. 362.

Describes the geologic features of the region and the occurrence of the vein system and the tin deposits.

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<sup>a</sup>Communicated to the author by Mr. Joseph Hyde Pratt.

FRECHEVILLE (R. J.). Great main lode of Dolcoath: Trans. Royal Geol. Soc. Cornwall, vol. 10, 1887, pp. 146-156.

Relation of tin lodes to older dikes; vein minerals—tourmaline, quartz, and mica; depth of workings; physical character of the rich tin ore; passing of tin ore into the granite wall; average richness of tin ore from a number of Cornish mines.

HAISE (EDWARD). The occurrence of tin ore at Sain Alto, Zacatecas, with reference to similar deposits in San Luis Potosi and Durango, Mexico: Trans. Am. Inst. Min. Eng., vol. 29, 1900, pp. 502-511, figs. 1-6.

Describes the occurrence of the various ore bodies.

HANKS (H. G.). Cassiterite: Fourth Annual Report of the State Mineralogist of California, 1884, pp. 115-123.

Notes on tin ores from Temescal, Cal.

HOFMAN (H. O.). Dry assay of tin ore: Trans. Inst. Min. Eng., vol. 18, 1890, pp. 3-54.

Describes an exhaustive series of experiments with the ores of the Black Hills to ascertain the best method of assaying tin ores.

INGALLS (W. R.). The tin deposits of Durango, Mexico: Trans. Am. Inst. Min. Eng., vol. 25, 1896, pp. 146-163.

Presents a map of a portion of Mexico, showing the location of the tin-ore deposits, describes the general geologic features and the character and distribution of the ore bodies, and discusses their origin.

KEMPTON (C. W.). The tin deposits of Durango, Mexico: Trans. Am. Inst. Min. Eng., vol. 25, 1896, pp. 997-998.

In discussion of paper on the same subject by W. R. Ingalls, mentions an occurrence of tin placers at Sain Alto, Zacatecas, Mexico.

LOUIS (HENRY). Metallurgy of tin: The Mineral Industry, vol. 5, 1896, pp. 533-588.

Methods of smelting tin; character of furnace lining, etc. Three stages in tin smelting: (1) reduction; (2) refining impure tin; (3) cleaning the slags.

LOUIS (HENRY). Production of tin. Reprint of series of articles in the Min. Jour., Railway and Commercial Gazette, 12 mo., 39 p. and map 3s., London, 1900.

MINCHIN (J. B.). Tin in Bolivia: The Mineral Industry, vol. 11, 1902, pp. 588-590.

Description of tin-producing district and tin-bearing lodes; methods of mining, transporting, and concentrating tin ores.

OWENS (F.). A review of the tin industries of the Malay Peninsula up to the end of 1899: The Mineral Industry, vol. 9, 1901, pp. 646-656.

PENROSE (R. A. F.). Tin deposits of the Malay Peninsula: Jour. Geol., vol. 11, 1903, pp. 135-154.

Geology of the Kinta district; description of tin placers; methods of mining and treating tin ores.

PHILLIPS (J. A.) and LOUIS (HENRY). Treatise on ore deposits: MacMillan & Co., London, 1896.

Description of both alluvial and lode deposits of tin in various parts of the world, and discussion of the genesis of tin ore.

PHILLIPS (WILLIAM). "On the veins of Cornwall," and "Oxide of tin:" Trans. Geol. Soc. London, vol. 2, 1814, pp. 336-376.

Standard authorities on the tin deposits of Cornwall.

ROLKER (C. M.). The alluvial tin deposits of Siak, Sumatra: Trans. Am. Inst. Min. Eng., vol. 20, 1892, pp. 50-84.

Notes on the geology and the occurrence and methods of working tin-bearing gravels.

ROLKER (C. M.). The production of tin in various parts of the world: Sixteenth Ann. Rept. U. S. Geol. Survey, pt. 3, 1895, pp. 458-538.

Includes statistics of production in various countries, and notes on the occurrence of tin in Maine, Virginia, North Carolina, Alabama, Texas, South Dakota, and California.

**ULKE (TITUS).** A contribution to the geology of the Dakota tin mines: Eng. and Min. Jour., vol. 53, 1892, p. 547.

Includes a brief description of the Archean rocks in which tin occurs, the mineral species found, and a discussion as to the origin of the tin-bearing granites.

**ULKE (TITUS).** The occurrence of tin ore at Kings Mountain, North Carolina, and near Vesuvius, Virginia: Mineral Resources U. S. for 1893, U. S. Geol. Survey, 1894, pp. 178-182.

Describes the character of the country rock of the two localities, and the manner of occurrence of the tin ore.

**WEED (W. H.).** The El Paso tin deposits: Bull. U. S. Geol. Survey, No. 178, 1891. Description of occurrence of cassiterite in Texas.



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## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 229.]

The serial publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

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WASHINGTON, D. C.

JUNE, 1904.

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### U. S. Geological survey.

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DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY  
CHARLES D. WALCOTT, DIRECTOR

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A

# GAZETTEER OF DELAWARE

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904





## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a bulletin, a gazetteer of Delaware.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF DELAWARE.

By HENRY GANNETT.

## GENERAL DESCRIPTION OF THE STATE.

Delaware is one of the Middle States, and borders upon Delaware Bay and the Atlantic Ocean between latitudes  $38^{\circ} 30'$  and  $39^{\circ} 45'$ , and between longitudes  $75^{\circ} 00'$  and  $75^{\circ} 50'$ . The east boundary of the State is Delaware Bay and the Atlantic Ocean. The south boundary is a line beginning at Cape Henlopen—as the name was originally applied—in latitude  $38^{\circ} 27'$ , and running due west 34 miles 309 perches. The west boundary is a straight line, commencing at the westernmost point on the southern boundary and running northward 81 miles 78 chains and 30 links until it touches and makes a tangent to the western periphery of a circle with a radius of 12 statute miles from the center of the town of Newcastle. The north boundary is the periphery of this circle as far as Delaware River.

Delaware was first settled by the Dutch in 1629. In 1638 the Swedes made a settlement and held the colony until 1655, when it was surrendered to the Dutch. In 1664 this region, with the other Dutch possessions, was acquired by the Duke of York. In 1682 this territory passed from the Duke of York to William Penn by deed, and was held by him until 1701, when he granted it a charter enabling its people to set up a separate government. Delaware is one of the thirteen original States, and was the first to adopt the Constitution, taking this step December 7, 1787.

The population of the State in 1900 was 184,735. The following table gives the population at each census since 1790:

### *Population of Delaware at each census since 1790.*

1790	59,096
1800	64,273
1810	72,674
1820	72,749
1830	76,748
1840	78,085
1850	91,532
1860	112,216
1870	125,015
1880	146,608
1890	168,493
1900	184,735

The density of population in 1900 was 94.3 inhabitants to a square mile. The chief city is Wilmington, with a population of 76,508 in 1900; the capital is Dover, with a population of 3,329 in 1900. The urban population in 1900 amounted to about 54 per cent. As to sexes, the population is divided in the proportion of 51 males to 49 females. The State contains 30,697 negroes, five-sixths of the population being white, while one-sixth is colored. The proportion of foreign born is small, only 7.5 per cent of the inhabitants being foreign born, to 92.5 per cent native born.

Of the total population 10 years of age and over, 12 per cent were unable to read and write. This illiteracy was, however, found mainly among negroes. The illiterate element of the whites consisted of only 7 per cent of the whole number, while that of the negroes constituted 38 per cent. Of the total population over 15 years of age, 36 per cent were single, 55 per cent married, 8 per cent widowed, and 0.2 per cent divorced.

Of the entire number of inhabitants over 10 years of age, almost exactly one-half were engaged in gainful occupations. Of the males not less than 81 per cent were wage-earners, and of the females 18 per cent. The wage-earners were distributed in the following proportions among the five grand divisions of occupations:

<i>Proportions of wage-earners in Delaware in 1900.</i>		Per cent.
Agriculture .....		26
Professions .....		4
Domestic and personal service.....		23
Trade and transportation .....		16
Manufacturing .....		31

In 1900 there were 9,687 farms in the State, of which more than nine-tenths were operated by white farmers. Of the entire number of farms, just one-half were operated by their owners and the other half by tenants. The area of land in farms was 1,066,228 acres, of which 754,010 acres were improved. The average size of the farms was 110 acres, which is considerably less than the average of the country. The improved area amounted to 71 per cent of the total farm area and 60 per cent of the total area of the State. The value of all the farm property was \$40,697,654, of which \$34,436,040 consisted of land and buildings, \$2,150,560 of farm implements and machinery, and \$4,111,054 of live stock. The farm products were valued at \$9,290,777. The average value per farm of all farm property was \$4,201, and the value of products per farm was \$959. The following table gives the number of animals upon farms:

*Animals on farms in Delaware in 1900.*

Meat cattle .....	54, 180
Horses .....	29, 722
Mules .....	4, 745
Sheep .....	11, 765
Swine .....	46, 732

The following table gives the amounts of farm products in 1900:

*Farm products of Delaware in 1900.*

Corn .....	bushels..	4, 736, 580
Wheat .....	do....	1, 870, 570
Oats .....	do....	131, 960
Hay and other forage.....	tons.....	128, 193
Potatoes .....	bushels..	414, 610
Sweet potatoes.....	do....	222, 165
Dairy products.....		\$1, 092, 807

The total number of manufacturing establishments in the State in 1900 was 1,417, with a total capital of \$41,203,239 and 22,303 employees. The wages paid annually amounted to \$9,259,661, the value of materials to \$26,652,601, and the value of products to \$45,387,630.

## GAZETTEER.

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**Angola;** post village in Sussex County near the coast.

**Appoquinimink;** small creek in Newcastle County, which flows eastward into Delaware Bay.

**Argo;** post village in Sussex County.

**Armstrong;** railroad station in Newcastle County on Philadelphia, Baltimore and Washington Railroad.

**Ashland;** post village in Newcastle County on the Baltimore and Ohio Railroad.

**Bacons;** post village in Sussex County.

**Bayard;** post village in Sussex County.

**Bayville;** post village in Sussex County.

**Bear;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Beavervalley;** small town in Newcastle County, near Wilmington.

**Bellevue;** post village in Newcastle County on Delaware River and on the Philadelphia, Baltimore and Washington Railroad.

**Berrytown;** village in Kent County.

**Bethel;** post village in Sussex County.

**Bingham;** station in Kent County on the Baltimore and Delaware Bay Railroad.

**Blackbird;** creek, a small left-hand branch of Duck Creek, a tributary of Delaware River.

**Blackbird;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Blackistone;** village in Kent County.

**Blackwater;** village in Sussex County.

**Blades;** post village in Sussex County.

**Blanchard;** post village in Sussex County on the Queen Anne's Railroad.

**Bombay;** hook, a point in Kent County projecting into Delaware Bay.

**Bombay Hook;** island in Kent County; it has Delaware Bay on the east, and is divided from the mainland by Duck Creek.

**Bowers;** village in Kent County.

**Brandywine;** post village in Newcastle County in the northernmost hundred in the State.

**Brenford;** post village in Kent County, 8 miles north of Dover, on the Philadelphia, Baltimore and Washington Railroad.

**Bridgeville;** town in Sussex County, near Nanticoke River, on the Philadelphia, Baltimore and Washington Railroad. Population, 613.

**Broad;** creek, a small left-hand tributary to Nanticoke River.

**Broad Kiln;** small creek in Sussex County flowing into Delaware Bay.

**Brownsville;** village in Kent County.

**Bunting;** post village in Sussex County.

**Camden;** town in Kent County, near Dover. Population, 536.

- Cannon**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Canterbury**; village in Kent County near Dover.
- Carpenter**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Carrcroft**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Cedar**; creek, rising in Sussex County and flowing east into Delaware Bay.
- Cedar**; island at entrance of Rehoboth Bay.
- Cedar Creek**; village in Sussex County.
- Centerville**; post village in Newcastle County near Wilmington.
- Chambersville**; village in Newcastle County.
- Chestnut**; hill in Newcastle County. Elevation, 280 feet.
- Cheswold**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 201.
- Choate**; post village in Newcastle County.
- Christiana**; creek, formed by Red Clay and White Clay creeks, which unite in Newcastle County. It runs northeastward and enters Delaware River about 2 miles below Wilmington.
- Christiana**; post village in Newcastle County.
- Clark**; point in Kent County projecting into Delaware Bay.
- Clarksville**; post village in Sussex County.
- Claymont**; post village in Newcastle County on Delaware River and on the Philadelphia, Baltimore and Washington Railroad.
- Clayton**; town in Kent County on Duck Creek on the Philadelphia, Baltimore and Washington Railroad. Population, 819.
- Columbia**; post village in Sussex County.
- Concord**; town in Newcastle County on the Baltimore and Ohio Railroad.
- Concord**; post village in Sussex County near Nanticoke River.
- Coochs Bridge**; post village near Delaware City in Newcastle County, known as Cooch, on the Philadelphia, Baltimore and Washington Railroad.
- Coolspring**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Coopers Corners**; village in Kent County.
- Corbit**; station in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Cowgill**; village in Kent County.
- Cowmarsh**; ditch, branch of Chotank River in Kent County.
- Cranberry**; branch, a tributary to Delaware Bay in Kent County.
- Dagsboro**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 190.
- Deakyneville**; village in Newcastle County.
- Deep**; creek, a head fork of Nanticoke River in Sussex County.
- Deepwater**; marshy point in Kent County projecting into Delaware Bay.
- Delaney**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Delaware**; bay, an inlet of the sea, or an estuary, through which Delaware River enters the Atlantic Ocean. The entrance of the bay, which is between Cape May and Cape Henlopen, is about 13 miles wide and its length is about 55 miles.
- Delaware**; river, formed by two branches sometimes called the Coquago and the Popacton, which rise in New York near the northeastern border of Delaware County and unite at Hancock in the same county. From this point it runs southeastward, forming the boundary between New York and Pennsylvania, until it reaches Port Jervis and touches the northern extremity of New Jersey. Here Kittatinny Mountain causes it to change its course and run southwestward along the base of that ridge to the Delaware Water Gap near Stroudsburg. About



40 miles below Philadelphia it expands into an estuary called Delaware Bay. This river forms the entire boundary between New Jersey and Pennsylvania. The length of the main stream is estimated to be about 280 miles; the mean discharge, 18,619 second-feet at Lambertville, N. J.; navigable to Trenton. Drainage area, 12,012 square miles.

**Delaware City**; city in Newcastle County on the Philadelphia, Baltimore and Washington Railroad, situated on Delaware River where it merges into Delaware Bay, about 12 miles southwest of Wilmington. Population, 1,132.

**Delmar**; town in Sussex County on the New York, Philadelphia and Norfolk and the Philadelphia, Baltimore and Washington railroads. Population, 444.

**Dover**; town and county seat of Kent County, situated on St. Jones Creek and on the Philadelphia, Baltimore and Washington Railroad, about 6 miles west of Delaware Bay.

**Downs Chapel**; post village in Kent County.

**Drawbridge**; post village in Sussex County near Delaware Bay.

**Drawyer**; creek, a small tributary to Delaware Bay in Newcastle County.

**Duck**; creek, forms the boundary between Kent and Newcastle counties and empties into Delaware Bay.

**Dupont**; station in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Dyke**; branch, a tributary to Delaware Bay in Kent County.

**Eagles Nest**; landing on Smyrna River on boundary between Newcastle and Kent counties.

**Edgemoor**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad about 3 miles from Wilmington.

**Edwardsville**; village in Kent County.

**Ellendale**; post village in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.

**Elsmere**; post village in Newcastle County on the Baltimore and Ohio Railroad.

**Fairmont**; post village in Sussex County.

**Farmington**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Farnhurst**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Faulkland**; post village in Newcastle County on the Baltimore and Ohio Railroad.

**Felton**; town and post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Fennimore**; landing on Appoquinimink Creek in Newcastle County.

**Fieldsboro**; village in Newcastle County.

**Forest**; post village in Newcastle County.

**Frankford**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad.

**Frederica**; town in Kent County on Murderkill Creek. Population, 706.

**Georgetown**; town and county seat of Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,658.

**Glasgow**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Goose**; marshy point in Kent County projecting into Delaware Bay.

**Granogue**; post village in Newcastle County on the Philadelphia and Reading Railway.

**Gravelly Branch**; creek, a head branch of Nanticoke River in Sussex County.

**Green**; branch of Smyrna River in Kent County.

**Green Spring**; village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

- Greenville;** post village in Newcastle County on the Philadelphia and Reading Railway.
- Greenwood;** post village in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.
- Grubbs;** post village in Newcastle County.
- Gumboro;** post village in Sussex County.
- Guyencourt;** post village in Newcastle County on the Philadelphia and Reading Railway.
- Hangmans Run;** a small tributary to Delaware Bay in Newcastle County.
- Harbeson;** post village in Sussex County, known as Broadkill, on the Philadelphia, Baltimore and Washington Railroad.
- Harrington;** town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,242.
- Hartly;** post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Hazlettville;** village in Kent County.
- Henlopen;** cape on the eastern coast of Delaware at the entrance of Delaware Bay.
- Henry Clay Factory;** post village in Newcastle County.
- Herring;** small creek rising in Sussex County and flowing east into Rehoboth Bay.
- Hickman;** post village in Kent County on the Queen Anne's Railroad.
- Hockessin;** post village in Newcastle County.
- Hollandville;** village in Kent County.
- Hollyoak;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Hollyville;** post village in Sussex County.
- Houston Station;** post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Indian;** river of Sussex County flowing eastward into the Atlantic Ocean.
- Iron;** hill in Newcastle County. Altitude, 340 feet.
- Isaac;** branch of St. Jones Creek in Kent County.
- Keeney;** station in Newcastle County on Philadelphia, Baltimore and Washington Railroad.
- Kelleys;** small island in Delaware Bay near the coast.
- Kent;** county, situated in the central part of the State, bounded on the east by Delaware Bay and drained by Choptank River and Duck and Mispillion creeks. The surface is extensively covered with forests. The soil is mostly fertile; area, 615 square miles; population, 32,762; white, 25,017; negro, 7,738; foreign born, 626; county seat, Dover. The mean magnetic declination in 1900 was 6° 30'; the mean annual rainfall about 45 inches, and the mean annual temperature, about 50°. The county is traversed by the Philadelphia, Baltimore and Washington Railroad.
- Kenton;** town and post village in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 192.
- Kirkwood;** post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Knowles;** post village in Sussex County.
- Lambs;** village in Sussex County.
- Laurel;** town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 825.
- Lebanon;** village in Kent County.
- Leipsic;** town in Kent County. Population, 305.
- Lewes;** creek, a very small branch rising in Sussex County and flowing north into Delaware Bay.

- Lewes**; town in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads. Population, 2,259.
- Lincoln**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Lisbon**; point in Newcastle County projecting into Delaware Bay.
- Little**; creek rising in Kent County and emptying into Delaware Bay.
- Little Bombay Hook**; small marshy island in Delaware Bay in Kent County near mouth of Delaware River.
- Littlecreek**; town in Kent County. Population, 259.
- Little Duck**; creek, a tributary to Delaware Bay in Kent County.
- Love**; creek, rises in Sussex County and empties into Rehoboth Bay.
- Lowes Crossroads**; village in Sussex County.
- McClellandsville**; post village in Newcastle County.
- McDonough**; post village in Newcastle County.
- Magnolia**; town in Kent County. Population, 208.
- Marshallton**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Marydel**; village on boundary line between Delaware and Maryland on the Philadelphia, Baltimore and Washington Railroad.
- Masten**; village in Kent County.
- Middle**; creek, a small right-hand tributary to Indian River in Sussex County.
- Middleford**; post village in Sussex County on Nanticoke River.
- Middletown**; town in Newcastle County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,567.
- Midway**; post village in Sussex County.
- Milford**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 2,500.
- Mill**; creek, a branch of Smyrna River in Kent County.
- Millsboro**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 391.
- Millville**; post village in Sussex County.
- Milton**; town in Sussex County on the Queen Anne's Railroad. Population, 948.
- Mispillion**; small creek forming the boundary between Sussex and Kent counties and flowing into Delaware Bay.
- Mission**; village in Sussex County.
- Montchanin**; post village in Newcastle County on the Philadelphia and Reading Railway.
- Morris**; branch of Smyrna River in Newcastle County.
- Mount Cuba**; post village in Newcastle County on the Baltimore and Ohio Railroad.
- Mount Pleasant**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Mudstone**; branch of St. Jones Creek in Kent County.
- Murder Hill**; small creek rising in Kent County and flowing into Delaware Bay.
- Nanticoke**; river, rises in Sussex County and runs southwestward into Maryland, where it forms the boundary between the counties of Dorchester and Wicomico, and enters Chesapeake Bay at the western extremity of the latter county. Length, 75 miles.
- Nassau**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Newark**; town in Newcastle County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads. Population, 1,213.
- Newcastle**; city in Newcastle County on the Philadelphia, Baltimore and Washington Railroad, situated on the Delaware River. Population, 3,380.
- Newcastle**; county, the most northern of the State, bordering on Pennsylvania. It is bounded on the east by Delaware River and Bay and is drained by Brandy-

wine, Christiana, Red Clay, and Duck creeks. The surface is undulating; the soil is fertile. Area, 434 square miles. Population, 109,697; white, 93,454; negro, 16,197; foreign born, 12,916. County seat, Wilmington. The mean magnetic declination in 1900 was  $6^{\circ} 05'$ ; the mean annual rainfall, 45 inches; and the temperature,  $50^{\circ} 00'$ . The county is traversed by the Baltimore and Ohio, the Philadelphia and Reading, and the Philadelphia, Baltimore and Washington railroads.

**Newport**; town in Newcastle County on Christiana Creek and on the Philadelphia, Baltimore and Washington Railroad.

**Northwest**; branch of Smyrna River in Newcastle County.

**Noxontown**; pond on headwaters of Appoquinimink Creek in Newcastle County.

**Oakel**; village in Sussex County.

**Oakgrove**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.

**Oakley**; post village in Sussex County on the Queen Anne's Railroad.

**Oceanview**; post village in Sussex County near the ocean.

**Odessa**; town in Newcastle County on Appoquinimink Creek.

**Omar**; post village in Sussex County.

**Overbrook**; post village in Sussex County on the Queen Anne's Railroad.

**Owens**; post village in Sussex County on the Queen Anne's Railroad.

**Pearson**; village in Kent County.

**Pepper**; small creek emptying into Indian Bay in Sussex County.

**Pepper**; village in Sussex County.

**Petersburg**; village in Kent County.

**Porter**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Port Mahon**; landing on shore of Delaware Bay in Kent County.

**Port Penn**; town in Newcastle County. Population, 304.

**Price Corners**; village in Newcastle County.

**Prime Hook**; creek, rising in Sussex County and emptying into Delaware Bay.

**Providence**; creek, a branch of Smyrna River in Newcastle County.

**Puncheon**; branch of St. Jones Creek in Kent County.

**Ralph**; post village in Sussex County.

**Redden**; post village in Sussex County on Philadelphia, Baltimore and Washington Railroad.

**Red Lion**; creek, a very small right-hand branch of Delaware River in Newcastle County.

**Redlion**; post village in Newcastle County.

**Reedy**; island at head of Delaware Bay.

**Rehoboth**; bay, on the coast about 10 miles south of Cape Henlopen, separated from the Atlantic Ocean by a narrow peninsula. It connects on the south with Indian River Bay.

**Rehoboth**; town in Sussex County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads. Population, 198.

**Beybold**; station in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Risingsun**; village in Kent County.

**Robbins**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.

**Robinsonville**; post village in Sussex County.

**Rockland**; post village in Newcastle County on Brandywine Creek.

**Roxana**; post village in Sussex County.

**St. Georges**; town in Newcastle County. Population, 325.

**St. Johns Branch**; river, one of the small head branches of Nanticoke River.

- St. Jones**; creek, a small right-hand tributary to Delaware Bay in Kent County.
- Sandtown**; village in Kent County.
- Sandy**; point in Kent County projecting into Delaware Bay.
- Scotts**; village in Sussex County.
- Seaford**; town in Sussex County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,724.
- Selbyville**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Seven Hickories**; village in Kent County.
- Sewell**; branch of Chester River in Kent County.
- Sheals Branch**; small head branch of Indian River, rising in Sussex County.
- Shortly**; village in Sussex County.
- Shorts**; landing on Smyrna River on boundary between Newcastle and Kent counties.
- Slaughter**; village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Silver Run**; small stream in Newcastle county tributary to Delaware Bay.
- Smith**; post village in Sussex County.
- Smyrna**; river, tributary to Delaware Bay on boundary between Newcastle and Kent counties.
- Smyrna**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 2,168.
- Southwood**; station in Newcastle County on the Baltimore and Ohio Railroad.
- Spring**; creek, a tributary to Delaware Bay in Kent County.
- Stanton**; post village in Newcastle County, near Christiana Creek, on the Philadelphia, Baltimore and Washington and the Baltimore and Ohio railroads.
- Stateroad**; post village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.
- Stockley**; post village in Sussex County on the Philadelphia, Baltimore and Washington Railroad.
- Summit Bridge**; post village in Newcastle County on the Chesapeake and Delaware Canal.
- Sussex**; southernmost county, bordering on Maryland. It is bounded on the east by Delaware Bay and the Atlantic Ocean, and is drained by Nanticoke and Indian rivers and by Mispillion and other creeks. The surface is nearly level, and a large part of it is covered with forests. The soil is mostly fertile; area, 911 square miles. Population, 42,276; white, 35,504; negro, 6,762; foreign born, 268. County seat, Georgetown. The mean magnetic declination in 1900 was 5° 45'; the mean annual rainfall, 45 inches; and the temperature 50°. The county is traversed by the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.
- Sycamore**; post village in Sussex County.
- Talleyville**; post village in Newcastle County.
- Tanners Branch**; river, a small left-hand tributary to Choptank River, rising in Kent County.
- Taylors Bridge**; post village in Newcastle County.
- Thomas Corners**; village in Newcastle County.
- Thompson**; post village in Newcastle County on the Pennsylvania Railroad.
- Thompsonville**; village in Kent County.
- Thoroughfare**; neck of land lying between Cedar Swamp and Smyrna River in Newcastle County.
- Tidbury**; creek, a branch of St. Jones Creek in Kent County.
- Townsend**; town in Newcastle County on the Philadelphia, Baltimore and Washington Railroad. Population, 399.

**Trinity**; post village in Sussex County.

**Union**; village in Newcastle County.

**Vance**; neck of land lying between Silver River and Drawyer Creek in Newcastle County.

**Vandyke**; village in Newcastle County on the Philadelphia, Baltimore and Washington Railroad.

**Viola**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Walker**; village in Newcastle County.

**Waples**; post village in Sussex County.

**Ward**; village in Sussex County.

**Warwick**; post village in Sussex County.

**Westville**; village in Kent County.

**Whitesboro**; post village in Sussex County on the Queen Anne's Railroad.

**Whitesville**; post village in Sussex County.

**Wildcat**; branch, a tributary to Choptank River in Kent County.

**Williamsville**; post village in Sussex County.

**Willowgrove**; village in Kent County.

**Wilmington**; city and county seat of Newcastle County. Population, 76,508. It is the port of entry, situated on the Delaware River and on the Brandywine and Christiana creeks which unite one-half mile from the river. It is on the Philadelphia, Baltimore and Washington, the Philadelphia and Reading, and the Baltimore and Ohio railroads.

**Winterthur**; post village in Newcastle County on the Philadelphia and Reading Railway.

**Wooddale**; post village in Newcastle County on the Baltimore and Ohio Railroad.

**Woodland**; post village in Sussex County.

**Woodside**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Wyoming**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 450.

**Yorklyn**; post village in Newcastle County on the Baltimore and Ohio.



## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 230.]

The publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the thirty-eighth in Series F, the complete list of which follows (all are bulletins thus far):

### SERIES F, GEOGRAPHY.

5. Dictionary of altitudes in United States, by Henry Gannett. 1884. 325 pp. (Out of stock; see Bulletin 160.)
6. Elevations in Dominion of Canada, by J. W. Spencer. 1884. 43 pp. (Out of stock.)
13. Boundaries of United States and of the several States and Territories, with historical sketch of territorial changes, by Henry Gannett. 1885. 135 pp. (Out of stock; see Bulletin 171.)
48. On form and position of sea level, by R. S. Woodward. 1888. 88 pp. (Out of stock.)
49. Latitudes and longitudes of certain points in Missouri, Kansas, and New Mexico, by R. S. Woodward. 1889. 133 pp.
50. Formulas and tables to facilitate the construction and use of maps, by R. S. Woodward. 1889. 124 pp. (Out of stock.)
70. Report on astronomical work of 1889 and 1890, by R. S. Woodward. 1890. 79 pp.
72. Altitudes between Lake Superior and Rocky Mountains, by Warren Upham. 1891. 229 pp.
76. Dictionary of altitudes in United States (second edition), by Henry Gannett. 1891. 393 pp. (Out of stock; see Bulletin 160.)
115. Geographic dictionary of Rhode Island, by Henry Gannett. 1894. 31 pp.
116. Geographic dictionary of Massachusetts, by Henry Gannett. 1894. 126 pp.
117. Geographic dictionary of Connecticut, by Henry Gannett. 1894. 67 pp.
118. Geographic dictionary of New Jersey, by Henry Gannett. 1894. 131 pp.
122. Results of primary triangulation, by Henry Gannett. 1894. 412 pp., 17 pls. (Out of stock.)
123. Dictionary of geographic positions, by Henry Gannett. 1895. 183 pp., 1 map. (Out of stock.)
154. Gazetteer of Kansas, by Henry Gannett. 1898. 246 pp., 6 pls.
160. Dictionary of altitudes in United States (third edition), by Henry Gannett. 1899. 775 pp. (Out of stock.)
166. Gazetteer of Utah, by Henry Gannett. 1900. 43 pp., 1 map.
169. Altitudes in Alaska, by Henry Gannett. 1900. 13 pp.
170. Survey of boundary line between Idaho and Montana from international boundary to crest of Bitterroot Mountains, by R. U. Goode. 1900. 67 pp., 14 pls.
171. Boundaries of United States and of the several States and Territories, with outline of history of all important changes of territory (second edition), by Henry Gannett. 1900. 142 pp., 53 pls. (Out of stock; see Bulletin 226.)
174. Survey of northwestern boundary of United States, 1857-1861, by Marcus Baker. 1900. 78 pp., 1 pl.
175. Triangulation and spirit leveling in Indian Territory, by C. H. Fitch. 1900. 141 pp., 1 pl.
181. Results of primary triangulation and primary traverse, fiscal year 1900-01, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 240 pp., 1 map.
183. Gazetteer of Porto Rico, by Henry Gannett. 1901. 51 pp.



185. Results of spirit leveling, fiscal year 1900-01, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 219 pp.
187. Geographic dictionary of Alaska, by Marcus Baker. 1901. 446 pp. (Out of stock.)
190. Gazetteer of Texas, by Henry Gannett. 1902. 162 pp., 8 pls. (Out of stock.)
192. Gazetteer of Cuba, by Henry Gannett. 1902. 113 pp., 8 pls. (Out of stock.)
194. Northwest boundary of Texas, by Marcus Baker. 1902. 51 pp., 1 pl.
196. Topographic development of the Klamath Mountains, by J. S. Diller. 1902. 69 pp., 13 pls.
197. The origin of certain place names in the United States, by Henry Gannett. 1902. 240 pp. (Out of stock.)
201. Results of primary triangulation and primary traverse, fiscal year 1901-02, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1902. 164 pp., 1 pl.
214. Geographic tables and formulas, compiled by S. S. Gannett. 1903. 224 pp.
216. Results of primary triangulation and primary traverse, fiscal year 1902-03, by S. S. Gannett. 1903. 222 pp., 1 pl.
224. Gazetteer of Texas (second edition), by Henry Gannett. 1904. 177 pp., 7 pls.
226. Boundaries of the United States and of the several States and Territories, with an outline of the history of all important changes of territory (third edition), by Henry Gannett. 1904. 145 pp., 54 pls.
230. Gazetteer of Delaware, by Henry Gannett. 1904. 15 pp.

Correspondence should be addressed to

The DIRECTOR,

UNITED STATES GEOLOGICAL SURVEY,

WASHINGTON, D. C.

JUNE, 1904.

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15, III p. 23½<sup>cm</sup>. (U. S. Geological survey. Bulletin no. 230.)  
Subject series F, Geography, 38.

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**U. S. Geological survey.**

Bulletins.

**Series.** no. 230. Gannett, Henry. A gazetteer of Delaware.  
1904.

**U. S. Dept. of the Interior.**

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**Reference.** U. S. Geological survey.



Bulletin No. 231

Series F, Geography, 39

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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A

GAZETTEER OF MARYLAND

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a bulletin, a gazetteer of Maryland.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

Hon. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF MARYLAND.

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By HENRY GANNETT.

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## GENERAL DESCRIPTION OF THE STATE.

Maryland is one of the Eastern States, bordering on the Atlantic Ocean, about midway between the northern and southern boundaries of the country. It lies between latitudes  $37^{\circ} 53'$  and  $39^{\circ} 44'$ , and between longitudes  $75^{\circ} 04'$  and  $79^{\circ} 33'$ . Its neighbors are Pennsylvania on the north, West Virginia and Virginia on the west and south, and Delaware on the east. Its north boundary is Mason and Dixon's line, and its east boundary is, in part, a nearly north-south line separating it from Delaware and Pennsylvania, and, in part, the Atlantic Ocean. On the south the boundary is an irregular line across the peninsula separating Chesapeake Bay from the Atlantic Ocean; then across Chesapeake Bay to the southern point of the entrance to Potomac River; thence following the low-water line on the south bank of the Potomac to the head of the north branch of that river, at a point known as Fairfax Stone, excepting the area of the District of Columbia. The west boundary is a meridian drawn through Fairfax Stone northward to Mason and Dixon's line.

The gross area of the State, including that part of Chesapeake Bay in its borders, the broad estuaries at the mouths of the rivers, and the lagoons on the Atlantic coast, is 12,210 square miles, of which 9,860 square miles are land area.

The topography of the State is extremely varied, ranging from level lands, but slightly elevated above the sea, to mountains and plateaus in the western part of the State, 3,000 feet in altitude. The peninsula east of Chesapeake Bay and a narrow strip west of that body of water constitute what is known as the Coastal Plain. This has an area of 5,000 square miles, or more than one-half of the land area of the State. The peninsula is very low and level, nowhere rising 100 feet above tide, and much of it, especially near the shore of the Atlantic Ocean and Chesapeake Bay, is marshy. The Atlantic coast is bordered by sand bars, including broad lagoons of shallow water on their



landward side. On the west side of Chesapeake Bay the Coastal Plain reaches an altitude of 300 feet in places, and shows much relief. Of the twenty-three counties of the State, the following are comprised in the Coastal Plain: Worcester, Somerset, Wicomico, Dorchester, Caroline, Talbot, Queen Anne, Kent, and Cecil, on the peninsula, and Prince George, Charles, Calvert, St. Mary, and Anne Arundel west of Chesapeake Bay.

Along a line running through Havre de Grace, Baltimore, and Washington the granitic rocks rise to the surface. This is called the “fall line,” from the fact that streams have rapids or falls where they flow across the first hard ledges. West of this line granite or allied rocks predominate, while east of it, on the Coastal Plain, are soft Cretaceous and Tertiary formations. This region extends from the fall line to the Blue Ridge and has an area of about 2,500 square miles. It is known as the Piedmont Plateau and comprises the following counties: Montgomery, Howard, Baltimore, Harford, Carroll, and Frederick. This region presents much more relief and is higher than the Coastal Plain.

The third zone, that of the Appalachian Mountains, extends from the Blue Ridge to the west boundary of the State, and has an area of about 2,000 square miles. It includes the counties of Washington, Allegany, and Garrett. In the main this region consists of an alternation of valleys and mountain ridges, the latter rising to altitudes of 2,000 and 3,000 feet. In the western part, mainly in Garrett County, is a plateau with a rolling surface 2,500 feet above sea level.

The mean elevation of the State is estimated at 350 feet. The areas in different zones of altitude are as follows:

	Square miles.
Sea level to 100 feet.....	7, 400
100 to 500 feet.....	2, 000
500 to 1,000 feet.....	1, 700
1,000 to 1,500 feet.....	300
1,500 to 2,000 feet.....	410
2,000 to 3,000 feet.....	400

Maryland was first settled in 1634 under a charter to Lord Baltimore, settlement being made at St. Marys. It was one of the thirteen original States, having adopted the Constitution on April 28, 1788. In 1791 the State ceded to the General Government for the purposes of a capital an area of about 70 square miles, which constitutes the present District of Columbia. The following table shows the growth of population in the State from the first census in 1790 to the latest in 1900:

Population of Maryland at each census since 1790.

Census.	Population.	Increase.
		<i>Per cent.</i>
1790 .....	319, 723	.....
1800 .....	341, 548	6. 8
1810 .....	380, 546	11. 4
1820 .....	407, 350	7. 0
1830 .....	447, 040	9. 7
1840 .....	470, 019	5. 1
1850 .....	583, 034	24. 0
1860 .....	687, 049	17. 8
1870 .....	780, 894	13. 7
1880 .....	934, 943	19. 7
1890 .....	1, 042, 390	11. 5
1900 .....	1, 188, 044	14. 0

In 1730 Maryland was the sixth State in the Union in population. In 1900, although its inhabitants were 3.7 times as numerous, it had dropped to the twenty-sixth in rank, owing to the rapid growth of the newer States in the Mississippi Valley. In 1900 the average density of population was 120 persons to the square mile. It has five cities which exceed 6,000 inhabitants, of which Baltimore has over half a million. The other four are as follows: Cumberland, 17,128; Hagerstown, 13,591; Frederick, 9,296; and Annapolis, the capital, 8,525. These five cities contain 46.9 per cent of the population of the entire State. In cities of more than 2,500 inhabitants live 48.8 per cent, or nearly one-half the population of the State, while the remainder, 51.2 per cent, may be regarded as rural. In 1900 the population was divided almost equally between the two sexes, 49.6 per cent being males and 50.4 per cent being females. The negro population, though large for a border State, is diminishing in proportion to the whites. In 1900 the whites formed 80.2 per cent and the negroes 19.8 per cent, or nearly one-fifth of the population. The number of foreign-born inhabitants was also small, the persons of native birth forming 92.1 per cent, while those born in foreign countries were 7.9 per cent. Immigration from other States has not been large, since it is found that of the native population 13 per cent were born in other States.

For a State containing so large a proportion of negroes, the illiteracy is slight. In 1900, persons of 10 years of age and upward who were unable to read and write constituted 11.1 per cent of the population. The illiterates comprised only 4.1 per cent of the native whites over 10 years old, 13.4 per cent of the foreign born, and 35.1 per cent of the negroes.

Of the population, 15 years old and upward, 37.9 per cent were single; 52.9 per cent married; 8.5 per cent widowed; 0.2 per cent divorced; and the conjugal condition of the remainder was unknown. The average size of a family was 4.9 persons, being somewhat larger than the average for the country.

Of persons 10 years old and upward, practically one-half, or exactly 49.8 per cent, were engaged in gainful occupations. Of males, 79.0 per cent were wage-earners; of females, 21.0 per cent. The following table shows the proportion of the wage-earners employed in each of the five general classes of occupations:

*Division of wage-earners according to occupations.*

	Per cent.
Agriculture .....	20.8
Professions .....	4.2
Domestic and personal service.....	26.1
Trade and transportation .....	19.9
Manufacturing and mining.....	29.0

Agriculture is one of the leading occupations. In 1900 the State contained 46,021 farms, of which seven-eighths were occupied by white farmers and one-eighth by negro farmers. Two-thirds of the farms were owned by their occupants, and one-third were rented, either for money rental or on shares of the products. The farms had a total area of 5,170,075 acres. The cultivated area amounted to 3,516,352 acres, or more than two-thirds of the farm area and 55.7 per cent of the total area of the State. The average size of the farms was 112.4 acres, being considerably less than the average for the United States. The total value of all the farms was \$204,645,407, which was made up of the following items:

*Value of farm lands, buildings, and accessories.*

Land .....	\$120, 367, 550
Buildings.....	54, 810, 760
Implements and machinery.....	8, 611, 220
Live stock .....	20, 855, 877
Average value per farm.....	4, 448
Average value of products per farm.....	952

The product amounted to 21.0 per cent of the value of the farms, and may be regarded as the farming profit. The following table shows the amount of live stock in the State:

*Live stock in Maryland in 1900.*

Cattle .....	306, 710
Horses .....	188, 726
Mules .....	19, 734
Sheep .....	194, 079
Swine .....	359, 812

The following table shows the leading farm products:

*Dairy products of Maryland in 1900.*

Dairy products.....	\$5, 228, 698
Poultry products.....	\$1, 158, 020
Fruit.....	\$2, 490, 385
Corn.....bushels..	19, 766, 510
Wheat.....do....	9, 671, 800
Oats.....do....	1, 109, 560
Potatoes.....do....	1, 991, 357
Sweet potatoes.....do....	677, 848
Hay.....tons..	507, 042
Tobacco.....: pounds..	24, 589, 480

In the production of tobacco, Maryland is the eighth State in the Union.

Manufactures are of great importance, Maryland being the fourteenth State in the Union, while in agriculture it is only the twenty-ninth. The following table summarizes its manufactures, of which two-thirds are carried on in the city of Baltimore:

*Statistics of manufactures of Maryland for 1900.*

Establishments.....	9, 879
Employees.....	108, 325
Horsepower.....	141, 879
Capital.....	\$163, 147, 260
Wages.....	\$38, 748, 551
Materials.....	\$144, 397, 680
Products.....	\$242, 552, 990

The railway mileage in the State in 1902 was 1,383 miles, most of which was in the Baltimore and Ohio and the Pennsylvania systems. There is one canal, the Chesapeake and Ohio, which follows Potomac River from Cumberland to Washington, D. C., and is principally used for the transportation of coal from the Cumberland district.

The principal and almost sole mineral product of the State is coal, which is mined in large quantities in the neighborhood of Cumberland. It is a bituminous coal of excellent quality. In 1901 the amount mined was 5,113,127 tons.

## GAZETTEER.

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- Aaron**; run, a small branch of Savage River in Garrett County.
- Abbey**; point in Harford County, projecting into the mouth of Bush River.
- Abell**; post village in St. Mary County.
- Aberdeen**; creek, a small branch of South River in Anne Arundel County.
- Aberdeen**; post village in Harford County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads. Population 600.
- Abingdon**; post village in Harford County.
- Accident**; post village in Garrett County.
- Accokeek**; post village in Prince George County.
- Acre**; creek, a small branch of Big Annemessex River in Somerset County.
- Adam**; small, almost entirely marshy island in Chesapeake Bay, Dorchester County.
- Adamstown**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Adelina**; post village in Calvert County.
- Adkins**; small pond drained by Givens Branch in Wicomico County.
- Admiral**; post village in Anne Arundel County.
- Ady**; village in Harford County.
- Aikin**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Aireys**; post village in Dorchester County on the Philadelphia, Baltimore and Washington Railroad.
- Aisquith**; neck, small strip of land in Dorchester County, lying between Far Creek and Honga River.
- Alberton**; post village in Howard County on the Baltimore and Ohio Railroad.
- Aldino**; post village in Harford County.
- Aleck**; pond, a small inlet of Isle of Wight Bay in Worcester County.
- Alesia**; post village in Carroll County on the Western Maryland Railroad.
- Allegany**; county, in the western mountainous part of the State, limited on the south by Potomac River, the south boundary of the State, on the north by Mason and Dixon's line, which is the southern boundary of the State of Pennsylvania, on the east by Washington County, and on the west by Garrett County. The surface is an alternation of ridges and valleys, trending nearly northeast and southwest, the latter drained by streams flowing into Potomac River. The area of the county is 432 square miles, of which more than one-fourth, or 75,900 acres, was under cultivation in 1900. The population for the same year was 53,694. The county seat and chief city is Cumberland, a coal-mining center of much importance, with a population of 17,128 in 1900. The average magnetic declination in the county in 1900 was 4° 5' west. The annual rainfall commonly ranges between 45 and 50 inches and the mean annual temperature between 45° and 50°.
- Allegany**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Allegany Grove**; village in Allegany County.
- Allegany Heights**; summit of Backbone Mountain in Garrett County; height, 3,187 feet.
- Allen**; village in Wicomico County.

**Allen Fresh;** village in Charles County.

**Allibone;** village in Harford County.

**Allomay;** creek, heads in Pennsylvania and flows through Carroll County into the Monocacy River.

**Almshouse;** creek, small branch of South River in Anne Arundel County.

**Alpha;** post village in Howard County.

**Altamont;** post village in Garrett County on the Baltimore and Ohio Railroad.

**Ambrose;** run, a small branch of Cherry Run in Garrett County.

**American Corners;** post village in Caroline County.

**Ammendale;** post village in Prince George County on the Baltimore and Ohio Railroad.

**Amos;** falls, in Susquehanna River in Cecil and Harford counties.

**Amos;** small island in Susquehanna River in Harford County.

**Amos;** post village in Harford County.

**Anacostia;** river, rising in Prince George County and flowing through the District of Columbia into Potomac River.

**Andersontown;** post village in Caroline County.

**Andora;** post village in Cecil County.

**Annapolis;** city and the capital of the State, situated in Anne Arundel County on the Annapolis, Washington and Baltimore and the Baltimore and Annapolis Short Line railroads. Population, 8,525.

**Annapolis Harbor;** small inlet of Severn River in Anne Arundel County.

**Annapolis Junction;** station in Howard County on the Annapolis, Washington and Baltimore and the Baltimore and Ohio railroads.

**Annapolis Roads;** a small inlet of Chesapeake Bay in Anne Arundel County.

**Anne Arundel;** county, situated in the central part of the State, bounded on the north by Baltimore County, east by Chesapeake Bay, south by Calvert County, west by Patuxent River and Prince George County, and northwest by Howard County. The surface is of a rolling character, but has no very elevated points. The area of the county is 425 square miles, of which more than one-half, or 148,325 acres, was under cultivation in 1900. The county seat and largest city is Annapolis, the capital and oldest city in the State, with a population of 8,525 in 1900. The average magnetic declination in the county in 1900 was 5° 0' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 45° and 50°.

**Antietam;** river, a branch of Potomac River in Washington County.

**Ape Hole;** creek, small stream flowing into Poconoke Sound in Somerset County.

**Applegarth;** post village on Hooper Island in Dorchester County.

**Appleton;** post village in Cecil County.

**Aquasco;** post village in Prince George County.

**Araby;** post village in Frederick County on the Baltimore and Ohio Railroad.

**Arbutus;** station in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Arden;** post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Ardwick;** post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Arlington;** station on the Western Maryland Railroad, partly in Baltimore County and partly in Baltimore City limits.

**Armiger;** post village in Anne Arundel County.

**Arnold;** point in Cecil County, projecting into Elk River.

**Arnold;** point in Anne Arundel County, projecting into Severn River.

**Arnold;** post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Arundel**; station in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Arundel-on-the-Bay**; post village in Anne Arundel County.

**Ash**; post village in Washington County.

**Asher Glade**; village in Garrett County.

**Ashland**; post village in Baltimore County.

**Ashton**; post village in Montgomery County.

**Aspen**; post village in Montgomery County.

**Assacorkin**; small marshy island in Chincoteague Bay, Worcester County.

**Assawoman**; bay, the northern extension of Isle of Wight Bay, which lies between the main coast and an outlying sand bar in Worcester County.

**Athaloo**; landing on Nanticoke River in Wicomico County.

**Atholton**; post village in Howard County.

**Avalon**; post village in Talbot County.

**Avalon**; station in Baltimore County on the Baltimore and Ohio Railroad.

**Avenel**; post village in Montgomery County.

**Avery**; post village in Montgomery County.

**Avilton**; post village in Garrett County.

**Avon**; creek, a small branch of Nanjemoy Creek in Charles County.

**Avondale**; creek, a small branch of Little Run in Carroll County.

**Avondale**; post village in Carroll County on the Western Maryland Railroad.

**Aydelotte**; branch, a small stream flowing into Newhope Pond, an inlet of Pocomoke River.

**Ayer**; creek, a small branch of Trappe Creek in Worcester County.

**Bachelor**; point in Talbot County, projecting into Tred Avon River.

**Back**; small branch of Western Branch in Prince George County.

**Back**; cove, a small inlet of Chesapeake Bay in Smith Island, Somerset County.

**Back**; creek, a small branch of Choptank River in Dorchester County.

**Back**; creek, a branch of Elk River in Cecil County.

**Back**; creek, a small branch of Manoken River in Somerset County.

**Back**; creek, a small branch of Patapsco River in Anne Arundel County.

**Back**; creek, a small branch of Patuxent River in Calvert County.

**Back**; creek, a small branch of Sassafras River in Cecil County.

**Back**; creek, a small branch of Severn River in Anne Arundel County.

**Back**; creek, a small stream in Worcester County flowing into Assawoman Bay.

**Back**; river, a short estuary on the west side of Chesapeake Bay in Baltimore County.

**Backbone**; mountain in Garrett County.

**Back Creek**; neck, a narrow strip of land lying between Back Creek and Elk River in Cecil County.

**Backgarden**; creek, a small stream flowing through sea marshes in Dorchester County into Fishing Bay.

**Backgarden**; small pond at the head of Backgarden Creek in Dorchester County.

**Back River**; neck, a strip of land lying between Middle River and Back River in Baltimore County.

**Back Wye**; river, a branch of Wye River in Queen Anne County.

**Bacon Hall**; village in Baltimore County.

**Bacon Hill**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Bacons**; wharf on St. Mary River in St. Mary County.

**Baden**; post village in Prince George County.

**Bagley**; post village in Harford County.

**Bakers**; cove, a small inlet of Chesapeake Bay in Cecil County.

**Bald Friar**; village in Cecil County.

- Bald Hill**; small branch of Western Branch in Prince George County.
- Baldwin**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Baldwin**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Ball**; creek, a small branch of Broad Creek in Talbot County.
- Ballanger**; creek, a small branch of Monocacy River in Frederick County.
- Baltimore**; chief city of Maryland, situated on an excellent harbor in Chesapeake Bay. The city is independent of county government. It is entered by the following railroads: Northern Central; Philadelphia, Baltimore and Washington; Baltimore and Annapolis Short Line; Baltimore and Ohio; Western Maryland; and Maryland and Pennsylvania. Population, 508,957.
- Baltimore**; county, situated in the northern central part of the State, bordered on the north by Pennsylvania, east by Harford County, west by Carroll County, and southwest and south by Patapsco River. This county is the most important one in the State, owing to its position surrounding Baltimore City. The surface is very uneven and varied. The area of the county is 656 square miles, more than one-half of which, or 244,806 acres, was under cultivation in 1900. The population for the same year was 90,755; the county seat, Towson, a town within a short distance of Baltimore City. The average magnetic declination in the county in 1900 was  $5^{\circ} 20'$  west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between  $50^{\circ}$  and  $55^{\circ}$ .
- Bank**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Barclay**; post village in Queen Anne County on the Philadelphia, Baltimore and Washington Railroad.
- Barksdale**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Barley**; creek, a small branch of South River in Anne Arundel County.
- Barnes**; cove, a small inlet of Tangier Sound on Smith Island in Somerset County.
- Barnes Landing**; creek, a small branch on Smith Island in Somerset County flowing into Chesapeake Bay.
- Barnesville**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Barrelville**; village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Barren**; creek, a branch of Nanticoke River in Wicomico County.
- Barron**; island in Dorchester County in Chesapeake Bay.
- Barron Creek**; point in Dorchester County, projecting into Nanticoke River.
- Barron Neck**; point in Talbot County, projecting into Harris Creek.
- Barstow**; post village in Calvert County.
- Bartholows**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Bartlett**; run, a small stream rising in Garrett County and flowing through Allegany County into Georges Creek.
- Barton**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Basin**; run, a small branch of Octararo Creek in Cecil County.
- Basket Switch**; village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.
- Bassett**; creek, a small branch flowing into Newport Bay from Worcester County.
- Bats**; neck, a strip of land lying between Warehouse and Shipping creeks in Queen Anne County.
- Battle**; creek, a small branch of Patuxent River in Calvert County.
- Battle**; post village in Calvert County.
- Bay**; village in Carroll County.
- Bayard**; post village in Anne Arundel County.



**Bay Bush**; point in Kent County, projecting into Chester River.

**Baynesville**; post village in Baltimore County.

**Bay Ridge**; village in Anne Arundel County on the Bay Ridge Railroad.

**Bayview**; village in Cecil County.

**Bayview**, village in Worcester County.

**Bay View Junction**; station in Baltimore County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.

**Beach**; point in Harford County, projecting into Bush River.

**Beacon Clumps**; group of small marshy islands in Chincoteague Bay in Worcester County.

**Beaghn**; small branch of Beaverdam Creek in Wicomico County.

**Beallsville**; post village in Montgomery County.

**Beallsville**; village in Frederick County.

**Beane**; post village in Montgomery County.

**Beantown**; village in Charles County.

**Bear**; small branch of Big Pipe Creek in Carroll County.

**Bear**; creek, a small branch of Patapsco River in Baltimore County.

**Bear**; creek, a small stream rising in Pennsylvania and flowing through Washington County into Sideling Hill Creek.

**Bear**; creek, a branch of Youghiogheny River in Garrett County.

**Bear**; hill, a summit of Fourmile Ridge in Garrett County.

**Bear**; hollow in Warrior Mountain in Allegany County.

**Bear**; point in Harford County, projecting into Chesapeake Bay.

**Bear Cabin**; small branch of Winters Run in Hartford County.

**Bear Camp**; branch, a small stream rising in Pennsylvania and flowing through Allegany County into Fifteenmile Creek.

**Bear Pen**; run, a small branch of Savage River in Garrett County.

**Beard**; creek, a small branch of South River in Anne Arundel County.

**Beaver**; run, a small branch of North Branch of Patapsco River in Carroll County.

**Beavercreek**; post village in Washington County.

**Beaver Dam**; creek, a branch of Gunpowder Falls in Baltimore County.

**Beaver Dam**; creek, a small branch of Tuckahoe Creek in Queen Anne County.

**Beaverdam**; creek, a branch of Wicomico River in Wicomico County.

**Beaverdam**; creek, a small stream flowing into Keene Broads, a small pond at the head of St. John Creek in Dorchester County.

**Beaverdam**; creek, a small branch of Anacostia River in Prince George County.

**Beaverdam**; creek, a small branch of Blackwater River in Dorchester County.

**Beaverdam**; creek, a small branch of Chicocomo Creek in Dorchester County.

**Beaverdam**; creek, a small branch of Nassawango Creek in Wicomico County.

**Beaverdam**; creek, a small branch of Point Branch in Prince George County.

**Beaverdam**; post village in Worcester County on the New York, Philadelphia and Norfolk Railroad.

**Beavue**; post village in St. Mary County.

**Beck**; small branch of Beaverdam Creek in Prince George County.

**Beckleysville**; village in Baltimore County.

**Beckman**; post village in Garrett County.

**Beckwith**; creek, a small branch of Choptank River in Dorchester County.

**Bed**; run, a small branch of Gwynn Falls in Baltimore County.

**Bedsworth**; post village in Somerset County.

**Beetree**; small branch of Gunpowder Falls in Baltimore County.

**Beir**; village in Allegany County on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.

**Belair**; county seat of Harford County on the Maryland and Pennsylvania Railroad. Population 961.

- Belalton**; post village in Charles County.
- Belcamp**; post village in Harford County on the Baltimore and Ohio Railroad.
- Belfast**; village in Baltimore County.
- Bellegrove**; post village in Allegany County.
- Bell Mills**; village in Montgomery County.
- Bellevue**; village in Talbot County.
- Beltsville**; station in Prince George County on the Baltimore and Ohio Railroad.
- Belvidere**; village in Cecil County on the Baltimore and Ohio Railroad.
- Ben**; run, a small branch of Patapsco River in Baltimore County.
- Benedict**; post village in Charles County.
- Benevola**; post village in Washington County.
- Benfield**; post village in Anne Arundel County.
- Bengies**; point in Baltimore County, projecting into Saltpeter Creek.
- Bengies**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.
- Bennett**; creek, a small branch of Monocacy River in Frederick County.
- Bennett**; point in Anne Arundel County, projecting into Miles Creek.
- Benoni**; point in Talbot County, projecting into Choptank River.
- Bens**; creek, a small branch of Lingamore Creek in Frederick County.
- Benson**; post village in Harford County.
- Bentley**; cove, a small inlet of Honga River in Dorchester County.
- Bentley**; point in Dorchester County on Hooper Island, projecting into Honga River.
- Bentley**; station in Baltimore County on the Northern Central Railway.
- Bentley Springs**; post village in Baltimore County on Northern Central Railway.
- Benville**; village in Charles County.
- Benville**; village in St. Mary County.
- Berean**; village in Baltimore County.
- Berkley**; post village in Harford County.
- Berlin**; town in Worcester County on the Baltimore, Chesapeake and Atlantic and the Philadelphia, Baltimore and Washington railroads. Population, 1,246.
- Berrett**; village in Carroll County.
- Bertha**; village in Calvert County.
- Berwyn**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Bestpitch**; post village in Dorchester County.
- Betheden Church**; village in Worcester County.
- Bethel**; village in Somerset County.
- Bethesda**; post village in Montgomery County.
- Beth Gap**; village in Anne Arundel County.
- Bethlehem**; post village in Caroline County on the Baltimore, Chesapeake and Atlantic Railway.
- Betterton**; post village in Kent County.
- Bevansville**; post village in Garrett County.
- Bier**; post village in Allegany County on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.
- Big**; small island in Worcester County in Assawoman Bay.
- Big**; small pond in Worcester County drained by Swan Gut Creek.
- Big**; ridge, a spur of Town Hill in Allegany County.
- Big**; run, a small branch of Maple Run in Allegany County.
- Big**; run, a small branch of Savage Creek in Garrett County.
- Big Annemessex**; river in Somerset County flowing into Tangier Sound.
- Big Bay**; point in Worcester County, projecting into Chincoteague Bay.
- Big Branch**; creek, a small branch of Deer Creek in Harford County.

- Big Elk;** creek, heads in Pennsylvania and flows through Cecil County into Elk River.
- Big Laurel;** run, a tributary of South Branch of Castleman River in Garrett County.
- Big Monie;** creek, a tributary to Chesapeake Bay in Somerset County.
- Big Patuxent;** river, heading in Howard County and flowing southeast into Chesapeake Bay, forming an estuary in its lower course.
- Big Piney;** run, heads in Garrett County and flows through Pennsylvania into Castleman River.
- Bigpool;** post village in Washington County on the Western Maryland Railroad.
- Big Savage;** mountain, lies between Savage River and Georges Creek in Garrett County.
- Big Shade;** run, heads in Pennsylvania and flows through Garrett County into Castleman River.
- Bigspring;** post village in Washington County.
- Big Thorofare;** water passageway in Somerset County between Smith Island and Otter Island.
- Billiard;** point in St. Mary County, projecting into Patuxent River.
- Billy;** small marshy island in Chesapeake Bay in Dorchester County.
- Binum;** run, a small branch of Bush Creek in Harford County.
- Birch;** small branch of Shingle Landing Prong in Worcester County.
- Bird Hill;** post village in Carroll County.
- Bird;** river, a tributary of Gunpowder River in Baltimore County.
- Birdsville;** post village in Anne Arundel County.
- Birdtown;** village in Somerset County.
- Biscoe;** creek, a small branch of Potomac River in St. Mary County.
- Bishop;** post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.
- Bishop Head;** point in Dorchester County, projecting into Fishing Bay and Hooper Strait.
- Bishop Head;** village in Dorchester County.
- Bishopville;** post village in Worcester County. Population 243.
- Bittinger;** post village in Garrett County.
- Bivalve;** post village in Wicomico County.
- Black;** creek, a small branch flowing into Knapp Narrows in Talbot County.
- Black;** hill in Cecil County. Elevation, 311 feet.
- Blackhawk;** run, a small branch of Middle Fork Creek in Garrett County.
- Blackhorse;** village in Harford County.
- Blacklick;** run, a small tributary of Savage River in Garrett County.
- Blackrock;** run, a small branch of Western Branch in Baltimore County.
- Blacks;** post village in Kent County.
- Black Swamp;** creek, a small branch of Patuxent River in Prince George County.
- Blackwalnut;** cove, a small inlet of Choptank River in Talbot County.
- Blackwalnut;** creek, a small tributary to Chesapeake Bay in Anne Arundel County.
- Blackwalnut;** point in Talbot County, projecting into mouth of Choptank River.
- Blackwater;** river in Dorchester County flowing through sea marshes into Fishing Bay.
- Bladensburg;** town in Prince George County on the Baltimore and Ohio Railroad. Population, 463.
- Blake;** creek, a small tributary of Potomac River in St. Mary County.
- Blake;** post village in Cecil County.
- Blakistone;** post village in St. Mary County.
- Blakistone;** small island in Potomac River in St. Mary County. A light-house is erected thereon.
- Blenheim;** post village in Baltimore County.

**Blocktown**; village in Montgomery County.

**Bloodsworth**; island almost entirely marshy in Chesapeake Bay, Dorchester County.

**Bloody Point**; creek, a small tributary to Chesapeake Bay in Talbot County.

**Bloomfield**; village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.

**Blooming Rose Settlement**; village in Garrett County.

**Bloomington**; post village in Garrett County on the Baltimore and Ohio Railroad.

**Blossom**; hill, a summit in Garrett County between Pine Hill and Solomon Ridge.

**Blue**; pond, an inlet of Chincoteague Bay in Worcester County.

**Blueball**; post village in Cecil County.

**Bluelick**; run, a small tributary of Savage River in Garrett County.

**Blue Mount**; station in Baltimore County on the Northern Central Railway.

**Blue Mountain**; post village in Washington County on the Western Maryland Railroad.

**Bluestone**; post village in St. Mary County.

**Bluff**; point in Anne Arundel County, projecting into Severn River.

**Bluff**; point in St. Mary County, projecting into Wicomico River.

**Bluff**; point on Hooper Island in Dorchester County, projecting into Chesapeake Bay.

**Blythedale**; post village in Cecil County.

**Boar**; small island in Assawoman Bay in Worcester County.

**Boat**; small marshy island in Lighting Knot Cove in Somerset County, south of Smith Island.

**Bodkin**; creek, a small tributary of Patapsco River in Anne Arundel County.

**Bodkin**; small island in Eastern Bay in Queen Anne County.

**Bodkin**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Bohemia**; river, a tributary to Elk River in Cecil County.

**Bolingbroke**; creek, a small tributary of Choptank River in Talbot County.

**Bolivar**; village in Frederick County.

**Booby**; small island in Chesapeake Bay in Baltimore County.

**Boone**; creek, a small tributary of Choptank River in Talbot County.

**Boones**; village in Anne Arundel County.

**Boonsboro**; town in Washington County. Population, 700.

**Boothbyhill**; post village in Harford County.

**Booze**; ditch, a small branch of Blackwater River in Dorchester County.

**Boring**; post village in Baltimore County.

**Bosely**; village in Baltimore County.

**Bostetter**; post village in Washington County.

**Boston**; creek, a small branch of Patuxent River in St. Mary County.

**Bowens**; post village in Calvert County.

**Bowie**; town in Prince George County on the Philadelphia, Baltimore and Washington Railroad. Population, 443.

**Bowley Bar**; point in Baltimore County, projecting into Middle River.

**Box**; point in Kent County, projecting into Chester River.

**Boxiron**; creek, a small branch flowing into Chincoteague Bay in Worcester County.

**Boxiron**; village in Worcester County.

**Boyer**; knob, a summit in Polish Mountain in Allegany County. Height, 1,564 feet.

**Boyds**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Bozman**; post village in Talbot County.

**Braddock**; run, a small tributary of North Branch of Potomac River in Allegany County.

**Bradenbaugh**; village in Harford County.

**Bradshaw**; post village in Baltimore County on the Baltimore and Ohio Railroad.

- Brady**; station in Allegany County on the Baltimore and Ohio Railroad.
- Branchville**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Brandywine**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Bread and Cheese**; creek, a small branch of Back River in Baltimore County.
- Break**; point in Queen Anne County, projecting into Chester River.
- Breakneck**; hill, a summit in Martin Mountain in Allegany County. Height, 1,872 feet.
- Breathedsville**; post village in Washington County.
- Brentland**; post village in Charles County.
- Brentwood**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Breton**; bay, an inlet of Potomac River in St. Mary County.
- Brewer**; creek, a small tributary of Severn River in Anne Arundel County.
- Brewer**; point in Anne Arundel County, projecting into Severn River.
- Brewington**; branch, a small tributary of Wicomico River in Wicomico County.
- Brew Mahr Mill**; village in Garrett County.
- Brian**; point in Queen Anne County, projecting into Prospect Bay.
- Briary**; creek, a small branch of Harris Creek in Talbot County.
- Brice**; point in Anne Arundel County, projecting into Severn River.
- Brice**; run, a small tributary of Patapsco River in Baltimore County.
- Brice**; village in Charles County.
- Bricoe**; wharf on the Patuxent River in St. Mary County.
- Bridge**; creek, a small branch of Broad Creek in Talbot County.
- Bridgetown**; town in Caroline County. Population, 50.
- Brien**; run, a small branch of Northeast Creek in Baltimore County.
- Brier**; point in Baltimore County, projecting into Chesapeake Bay.
- Brier**; mountain ridge in Garrett County.
- Briery**; point in Harford County, projecting into Bush Creek.
- Brighton**; post village in Montgomery County.
- Brightseat**; village in Prince George County.
- Brink**; post village in Montgomery County.
- Brinklow**; post village in Montgomery County.
- Bristol**; post village in Anne Arundel County.
- Broad**; creek, a small branch flowing into Chesapeake Bay in Queen Anne County.
- Broad**; creek, a small branch flowing into Ellis Bay in Wicomico County.
- Broad**; creek, a small stream flowing into Pocomoke Sound in Somerset County.
- Broad**; creek, a small tributary of Chester River in Kent County.
- Broad**; creek, a small tributary of Magothy River in Anne Arundel County.
- Broad**; creek, a small tributary of Manokin River in Somerset County.
- Broad**; creek, a small tributary of South River in Anne Arundel County.
- Broad**; creek, a tributary of Choptank River in Talbot County.
- Broad**; creek, a tributary of Susquehanna River in Harford County.
- Broad**; run, a small branch of James Creek in Harford County.
- Broad**; run, a small tributary of Gunpowder Falls in Baltimore County.
- Broad**; run, a small tributary of Potomac River in Montgomery County.
- Broad**; neck, a strip of land between East and West forks of Langford Bay in Kent County.
- Broad Ford**; run, a small tributary of Little Youghiogheny River in Garrett County.
- Broad Run**; village in Frederick County.
- Brockatonorton**; bay, an arm of Chincoteague Bay in Worcester County.
- Brome**; wharf, on St. Mary River in St. Mary County.
- Bronnack**; bay, an inlet of Trippe Bay in Dorchester County.

**Brook**; run, a small branch of McIntosh Run, in St. Mary County.

**Brookeville**; town in Montgomery County. Population, 158.

**Brooklandville**; post village in Baltimore County on the Northern Central Railway.

**Brooklyn**; station in Anne Arundel County on the Baltimore and Ohio Railroad.

**Brooks**; creek, a small branch of Little Choptank River in Dorchester County.

**Brookview**; post village in Dorchester County on the Baltimore, Chesapeake and Atlantic Railway.

**Broome**; small, almost entirely marshy island in Patuxent River in Calvert County.

**Broome Island**; post village in Calvert County.

**Browning Mill**; village in Garrett County.

**Browningsville**; village in Montgomery County.

**Browns**; creek, a small tributary of Chester River in Kent County.

**Browns**; creek, a small stream flowing into Hawk Cove in Baltimore County.

**Browns**; landing on the Wye River in Queen Anne County.

**Browns**; point in Baltimore County, projecting into Middle River.

**Brownsville**; post village in Washington County on the Baltimore and Ohio Railroad.

**Bruff**; island in Wye River in Talbot County.

**Brunswick**; town in Frederick County on the Baltimore and Ohio Railroad. Population, 2,471.

**Bryantown**; post village in Charles County.

**Bryanville**; village in Garrett County.

**Buck**; hill, a summit in Peapatch Ridge in Garrett County.

**Buckeystown**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Buckingham**; landing on Chester River in Kent County.

**Buck Island**; pond, a small inlet of St. Martin River in Worcester County.

**Bucklodge**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Buck Neck**; landing on Worton Creek in Kent County.

**Bucktown**; post village in Dorchester County.

**Budd**; landing on Sassafras River in Cecil County.

**Budd**; creek, a small stream on the boundary between St. Mary County and Charles County, flowing into Wicomico River.

**Budd Creek**; landing on Wicomico River in Charles County.

**Budd Creek**; post village in St. Mary County.

**Buenavista**; post village in Calvert County.

**Buenavista**; village in Prince George County.

**Buffalo**; creek, a small branch of Piney Creek in Baltimore County.

**Buffalo**; run, a small branch of Youghiogeny River in Garrett County.

**Bull Glade**; run, a small branch of Muddy Run in Garrett County.

**Bull Mountain**; hill in Cecil County. Height, 306 feet.

**Bullock**; small island at mouth of Wicomico River in St. Mary County.

**Burch**; post village in Calvert County.

**Burdette**; post village in Montgomery County.

**Burkittsville**; town in Frederick County. Population, 229.

**Burnt Mill**; creek, small branch of McIntosh Run in St. Mary County.

**Burnt Mills**; post village in Montgomery County.

**Burrissville**; village in Queen Anne County.

**Burrsville**; post village in Caroline County.

**Burtonsville**; post village in Montgomery County.

**Bush**; creek, a small branch of Monocacy River in Frederick County.

**Bush**; point in Harford County, projecting into Bush River.

**Bush**; ridge, a spur of Collier Mountain in Allegany County.

**Bush Cabin**; small branch of Gunpowder Falls in Baltimore County.

**Bush River**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.

**Bushwood**; village in St. Mary County.

**Butler**; post village in Baltimore County.

**Butlers**; village in Anne Arundel County.

**Butlertown**; village in Kent County.

**Buxton**; village in Prince George County.

**Buzzard Island**; creek, a small tributary of Patuxent River in Calvert County.

**Cabin**; small branch of Little Seneca Creek in Montgomery County.

**Cabin**; small branch of Severn River in Anne Arundel County.

**Cabin**; small branch of Western Branch in Prince George County.

**Cabin**; branch, a small tributary of Patuxent River in Howard County.

**Cabin**; creek, a small stream flowing into Curtis Bay in Anne Arundel County.

**Cabin**; creek, a small stream flowing into Prospect Bay in Queen Anne County.

**Cabin**; creek, a small tributary of Choptank River in Dorchester County.

**Cabin Creek**; neck, a strip of land lying between Blinthorn and Cabin creeks in Dorchester County.

**Cabin John**; creek, a small tributary of Potomac River in Montgomery County.

**Cabin John**; creek, a small tributary of Elk River in Cecil County.

**Cabin John**; post village in Montgomery County.

**Cadle**; creek, a small tributary of Rhode River in Anne Arundel County.

**California**; post village in St. Mary County.

**California**; post village in Wicomico County.

**Calvary**; post village in Harford County.

**Calvert**; bay, a small arm of Potomac River in St. Mary County.

**Calvert**; county, situated in the western shore of the Chesapeake Bay, forming a peninsula which is bounded on the north by Anne Arundel County, east by the bay, and west by Patuxent River. The surface is undulating and drains from a central elevation toward the bay and river, into which flow many small creeks. The area of the county is 222 square miles, of which nearly two-thirds, or 88,605 acres, were under cultivation in 1900. The population for the same year was 10,223; the county seat, Prince Fredericktown. The average magnetic declination in the county in 1900 was 4° 45' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Calvert**; creek, a small stream in St. Mary County flowing into Calvert Bay.

**Calvert**; post village in Cecil County.

**Calverton**; station within the chartered limits of Baltimore City on the Philadelphia, Baltimore and Washington Railroad.

**Cambria**; station in Harford County on the Maryland and Pennsylvania Railroad.

**Cambridge**; town in Dorchester County on the Philadelphia, Baltimore and Washington Railroad. Population, 5,747.

**Camden**; village in Wicomico County.

**Camden Junction**; village in Baltimore County.

**Campbell**; post village in Worcester County.

**Campbell Ditch**; run, a small branch of Aydelotte Branch in Wicomico County.

**Campsprings**; post village in Prince George County.

**Canal**; village in Cecil County.

**Canoe Neck**; creek, a small branch of St. Clement Creek in St. Mary County.

**Canton**; town in Baltimore County near Baltimore.

**Capitola**; post village in Wicomico County.

**Captain**; point in St. Mary County, projecting into Patuxent River.

**Cardiff**; post village in Harford County on the Maryland and Pennsylvania Railroad.



**Carea**; post village in Harford County.

**Caren**; village in Harford County.

**Carey**; creek, a small tributary of Choptank River in Dorchester County.

**Carey**; run, a small tributary of Savage River in Garrett County.

**Carlos Junction**; station in Allegany County on the Cumberland and Pennsylvania Railroad.

**Carmichael**; post village in Queen Anne County.

**Carny**; post village in Baltimore County.

**Caroline**; county, bounded on the east by the State of Delaware, northwest and west by Queen Anne and Talbot counties, and south by Dorchester County. The surface is generally level, though sufficiently undulating to afford good drainage. The area is 320 square miles, of which more than two-thirds, or 125,908 acres, were under cultivation in 1900. The population for the same year was 16,248; county seat, Denton. The average magnetic declination in the county in 1900 was 5° 45' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Carpenter**; small island in Chester River in Queen Anne County.

**Carpenter**; point in Cecil County, projecting into Chesapeake Bay.

**Carr**; creek, a small stream flowing into Annapolis Roads in Anne Arundel County.

**Carroll**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Carroll**; county, bounded on the north by Pennsylvania, south by Howard County, east by Baltimore County, and west by Frederick County. The surface is mostly undulating, watered by fine streams, tributaries of Patapsco and Monocacy rivers, which flow from many springs of the purest water. The area of the county is 437 square miles, of which more than three-fourths, or 227,693 acres, were under cultivation in 1900. The population for the same year was 33,860. The county seat and chief town is Westminster, a town of about 3,200 inhabitants. The magnetic declination in the county in 1900 was 5° 30' west. The annual rainfall in the county commonly ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Carroll**; creek, a small tributary of Monocacy River in Frederick County.

**Carroll**; point in Baltimore County, projecting into Bush River.

**Carrollton**; post village in Carroll County on the Western Maryland Railroad.

**Carrot**; cove, a small inlet of Northeast River in Cecil County.

**Carsins**; run, a small branch of Swan Creek in Harford County.

**Carsins**; village in Harford County.

**Carter**; creek, a small stream flowing into Chesapeake Bay in Queen Anne County.

**Carthagena**; creek, a small tributary of St. Mary River in St. Mary County.

**Carville**; station in Queen Anne County on the Philadelphia, Baltimore and Washington Railroad.

**Cascade**; post village in Washington County.

**Cassidy**; wharf on Sassafras River in Cecil County.

**Casson**; neck, a strip of land between Hudson and Phillips creeks in Dorchester County.

**Castlehaven**; village in Dorchester County.

**Castleman**; river heading in Garrett County and flowing into Pennsylvania into Youghiogheny River.

**Castleton**; post village in Harford County.

**Cat**; creek, a small tributary of Patuxent River in St. Mary County.

**Cathcart**; village in Harford County.

**Catlin**; village in Queen Anne County.

**Catoctin**; creek, a tributary of Potomac River in Frederick County.

**Catoctin**; mountain, a continuation of Catoctin Mountain in Virginia into Frederick County.



**Catoctin**; station in Frederick County on the Baltimore and Ohio Railroad.

**Catonsville**; village in Baltimore County.

**Cavetown**; post village in Washington County on the Western Maryland Railroad.

**Cayots**; post village in Cecil County.

**Cecil**; county, organized in 1647, one of the most thriving and enterprising in the State. It is situated in the northeast corner of the State, bounded on the north by Pennsylvania, east by Delaware, south by Sassafras River and west by Chesapeake Bay and Susquehanna River. The surface is of a mixed character, that part above the bay being mostly rolling and hilly, while below Elkton it is level. The area of the county is 360 square miles, of which almost two-thirds, or 141,401 acres were under cultivation in 1900. The population for the same year was 24,662. The county seat is Elkton, a town of about 2,600 inhabitants. Port Deposit is the principal business town, having a population of about 1,600, while Chesapeake City is the third town in size, having a population of about 1,200. The average magnetic declination in 1900 was 4° 45' west. The annual rainfall ordinarily ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Cecil**; creek, a small stream in St. Mary County flowing into St. Clements Bay.

**Cecilton**; village in Cecil County.

**Cedar**; creek, a small stream flowing into Fishing Bay in Dorchester County.

**Cedar**; hill in Harford County.

**Cedar**; point in Anne Arundel County, projecting into West River.

**Cedar**; point in Anne Arundel County, projecting into Severn River.

**Cedar**; point in Charles County, projecting into Potomac River.

**Cedar**; point in Dorchester County, projecting into Honga River.

**Cedar**; point in Kent County, projecting into Chester River.

**Cedar**; point in St. Mary County, projecting into Chesapeake Bay.

**Cedar**; point in Talbot County, projecting into Broad Bay.

**Cedar**; point in Worcester County, projecting into St. Martin River.

**Cedar**; small marshy island in Chincoteague Bay in Worcester County.

**Cedar**; straits, on the boundary between Somerset County, Md., and Accomac County, Va.

**Cedar Cliff**; village in Allegany County.

**Cedargrove**; post village in Montgomery County.

**Cedarville**; post village in Prince George County on the Washington, Potomac and Chesapeake Railroad.

**Centerville**; county seat of Queen Anne County. Population, 1,231.

**Chalk**; point in Anne Arundel County, projecting into West River.

**Champ**; post village in Somerset County.

**Chance**; post village in Somerset County.

**Chance**; point in Talbot County, projecting into Harris Creek.

**Chancellor**; point in St. Mary County, projecting into St. Mary River.

**Chancellor**; point in Talbot County, projecting into Choptank River.

**Chancellors**; point in Dorchester County, projecting into Choptank River.

**Chaney**; post village in Calvert County on the Chesapeake Beach Railway.

**Chaneyville**; post village in Calvert County.

**Chapel**; creek, a small branch of Choptank River in Dorchester County.

**Chapel**; point in Charles County, projecting into Port Tobacco River.

**Chapel**; village in Harford County.

**Chapters**; point in Wicomico County, projecting into Nanticoke River.

**Chaptico**; bay, an inlet of Wicomico River in St. Mary County.

**Chaptico**; creek, a small tributary to Chaptico Bay in St. Mary County.

**Chaptico**; post village in St. Mary County.

**Charles**; small branch of Western Branch in Prince George County.

**Charles**; creek, a small branch of Honga River in Dorchester County.

**Charles**; county, organized in 1640, occupies the southwest part of the State, and is bounded on the west and south by Potomac River, north by Prince George County, and on the southwest by St. Mary County. The surface of the county is generally low, but undulated sufficiently to be well drained by the numerous branches of the bordering rivers. The area of the county is 451 square miles, of which more than one-half, or 153,465 acres, was under cultivation in 1900. The population for the same year was 17,662; the county seat, Laplata. The average magnetic declination in 1900 was 4° 30' west. The annual rainfall ordinarily ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Charles**; point in Somerset County, projecting into Big Annemessex River.

**Charles**; run, a small tributary of Gunpowder Falls in Baltimore County.

**Charleston**; creek, a small tributary of Wicomico River in Charles County.

**Charlestown**; town in Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 244.

**Charlestown**; village in Allegany County.

**Charlesville**; village in Frederick County.

**Charlotte Hall**; post village in St. Mary County on the Washington, Potomac and Chesapeake Railroad.

**Charlton**; post village in Washington County on the Western Maryland Railroad.

**Chase**; creek, a small tributary of Severn River in Anne Arundel County.

**Chase**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Chattolane**; post village in Baltimore County.

**Chautauqua Beach**; post village in Anne Arundel County on the Bay Ridge Railroad.

**Cheltenham**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Cherry**; creek, a small branch of Youghiogheny River in Garrett County.

**Cherry**; creek, a branch of Deep Creek in Garrett County.

**Cherry**; point in Dorchester County, projecting into Choptank River.

**Cherry**; small island in Choptank River in Dorchester County.

**Cherry Cove**; creek, a small stream flowing into Breton Bay in St. Mary County.

**Cherryfield**; point in St. Mary County, projecting into St. Mary River.

**Cherry Glade**; run, small tributary of Little Youghiogheny River in Garrett County.

**Cherryhill**; post village in Cecil County.

**Cherry Hill**; village in Harford County.

**Chesapeake**; bay, an arm of the Atlantic Ocean, extending from northeast Maryland nearly south, connecting with the Atlantic Ocean in Virginia, between Capes Charles and Henry. Its length is about 175 miles, and breadth 8 or 10 miles. Into it flow many large rivers from the west, namely, the Susquehanna at its head, the Rappahannock, York, and James. The bay has been produced by the sinking of the land, and the same movement is converting the lower courses of all these rivers into estuaries. The shores of the bay are marshy, especially the east shore, where the country is extremely low.

**Chesapeake**; town in Cecil County. Population, 1,172.

**Chesapeake and Ohio**; canal, artificial waterway running parallel with Potomac River from Cumberland, Md., to Georgetown, D. C.

**Chesapeake Beach**; post village in Calvert County on Chesapeake Beach Railway.

**Chester**; post village in Queen Anne County on Queen Anne's Railroad.

**Chester**; river on boundary between Kent and Queen Anne counties tributary to Chesapeake Bay.

**Chesterfield**; post village in Anne Arundel County.

- Chestertown**; county seat of Kent County on the Philadelphia, Baltimore and Washington Railroad. Population 3,008.
- Chesterville**; post village in Kent County.
- Chestnut Hill**; village in Harford County.
- Chestnut Knob**; hill in Garrett County 2,500 feet high.
- Cheston**; creek, small tributary of West River in Anne Arundel County.
- Chevy Chase**; post village in Montgomery County.
- Chew**; creek, a small tributary of Patuxent River in Calvert County.
- Chewsville**; post village in Washington County.
- Chicacomico**; river, a branch of Transquaking River in Dorchester County.
- Chicamuxen**; post village in Charles County.
- Chickomuxen**; creek, a small tributary of Potomac River in Charles County.
- Chicono**; branch, small tributary of Nanticoke River in Dorchester County.
- Chilbury**; point in Harford County, projecting into Bush River.
- Childs**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Chillum**; post village in Prince George County.
- Chincapin**; run, a small branch of Herring Run in Baltimore County.
- Chincoteague**; bay, a shallow lagoon with marshy shores separating the mainland of Worcester County, Md., and Accomac County, Va., from the sand bars of the Atlantic coast.
- Chingville**; post village in St. Mary County.
- Chisholm**; run, a small tributary of Youghiogheny River in Garrett County.
- Chlora**; point in Talbot County, projecting into Choptank River.
- Choptank**; post village in Caroline County.
- Choptank**; river, heading in Caroline County and forming part of the boundary between Carroll, Talbot, and Dorchester counties and flowing into Chesapeake Bay.
- Christiana**; creek, heads in Pennsylvania and flows across the northeastern part of Cecil County, through Delaware into Delaware Bay.
- Christley**; run, a small tributary of Muddick River in Garrett County.
- Christs Rock**; village in Dorchester County.
- Chromehill**; village in Harford County.
- Chub**; run, heads in Pennsylvania and flows through Garrett County into Mill Run.
- Church**; creek, a small tributary of Choptank River in Dorchester County.
- Church**; creek, a small tributary of Bush River in Harford County.
- Church**; creek, a small tributary of Chester River in Kent County.
- Church**; creek, a small tributary of South River in Anne Arundel County.
- Church**; run, a small branch of Piney Run in Garrett County.
- Churchcreek**; post village in Dorchester County.
- Church Hill**; town in Queen Anne County. Population, 368.
- Churchton**; post village in Anne Arundel County.
- Churchville**; post village in Harford County.
- Churn**; creek, a small branch in Kent County flowing into Still Pond.
- Clagettsville**; village in Montgomery County.
- Claiborne**; post village in Talbot County.
- Clara**; post village in Wicomico County.
- Clark**; point in Baltimore County, projecting into Middle River.
- Clark**; run, a small stream in Charles County flowing into Zekiah Swamp.
- Clark**; run, a small branch of Cherry run in Garrett County.
- Clarksburg**; post village in Montgomery County.
- Clarkson**; post village in Howard County.
- Clarksville**; post village in Howard County.
- Clarks Wharf**; village in Calvert County.
- Clarysville**; village in Allegany County on the George's Creek and Cumberland Railroad.

**Clay**; island, a bit of elevated dry land in sea marshes of Dorchester County.

**Clay Bank**; point in Baltimore County, projecting into Patapsco River.

**Clay Island**; creek, a bayou flowing through Clay Island in Dorchester County.

**Clayton**; post village in Harford County on the Baltimore and Ohio Railroad.

**Clear Spring**; town in Washington County on the Western Maryland Railroad.

Population 474.

**Clements**; creek, a small tributary of Severn River in Anne Arundel County.

**Clements**; post village in St. Mary County.

**Clermont Mills**; village in Harford County.

**Clifford**; station in Baltimore County on the Baltimore and Ohio and Baltimore and Annapolis Short Line railroads.

**Clifton**; beach in Charles County on Potomac River.

**Clifton**; small lake in suburb of Baltimore city within its chartered limits.

**Clifton**; point in Somerset County, projecting into Manokin River.

**Clinton**; post village in Prince George County.

**Cloppers**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Cloverly**; post village in Montgomery County.

**Cobb**; point in Charles County, projecting into Wicomico River.

**Cockey**; small island at mouth of Chester River in Kent County.

**Cockeysville**; post village in Baltimore County on the Northern Central Railway.

**Cocks**; point in Anne Arundel County, projecting into Severn River.

**Cocktown**; creek, a small tributary of Patuxent River in Calvert County.

**Coffins**; point in Worcester County, projecting into Sinepuxent Bay.

**Cohouck**; point in St. Mary County, projecting into Wicomico River.

**Cokeland**; post village in Dorchester County.

**Cokesbury**; village in Somerset County.

**Colbourn**; creek, a small stream flowing into Big Annemessex River in Somerset County.

**Colbourne**; post village in Worcester County.

**Cole**; creek, a small tributary of Patuxent River in St. Mary County.

**Cole**; post village in Harford County.

**Coleman**; post village in Kent County.

**Colesville**; post village in Montgomery County.

**Colgate**; creek, a small tributary of Patapsco River in Baltimore County.

**College Green**; village in Cecil County.

**College Park**; post village in Prince George County on the Baltimore and Ohio Railroad.

**Collier**; small marshy island in Isle of Wight Bay in Worcester County.

**Collier**; small mountain ridge in Allegany County.

**Collier**; run, a small stream heading in Pennsylvania and flowing through Garrett County into Mill Creek.

**Collington**; branch of Western Branch in Prince George County.

**Collington**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Collins**; gut, a small branch of Wicomico Creek in Wicomico County.

**Colora**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Colton**; village in St. Mary County.

**Columbia**; post village in Howard County.

**Combs**; creek, a small stream flowing into Breton Bay in St. Mary County.

**Comcy**; point in Queen Anne County, projecting into Chester River.

**Comegy Bight**; small island in Chester River in Kent County.

**Comegys**; run, a small branch of Broad Ford Run in Garrett County.

**Compton**; post village in St. Mary County.

**Comus**; post village in Montgomery County.

- Conaways**; post village in Anne Arundel County.
- Concord**; point in Harford County, projecting into Susquehanna River.
- Concord**; post village in Caroline County.
- Conowingo**; creek, a stream rising in Pennsylvania and flowing through Cecil County into Susquehanna River.
- Contee**; station in Prince George County on the Baltimore and Ohio Railroad.
- Contrary**; knob, a hill in Garrett County. Height, 2,500 feet.
- Conway**; hill in Backbone Mountain in Garrett County. Height, 3,073 feet.
- Conwingo**; post village in Cecil County.
- Cook**; point in Dorchester County, projecting into Choptank River.
- Cook Point**; cove, a small inlet of Choptank River in Dorchester County.
- Cooksey**; post village in Charles County.
- Cooksville**; post village in Howard County.
- Coolbranch**; run, a small branch of Deer Creek in Harford County.
- Coon**; small mountain ridge in Washington County.
- Cooper**; creek, a small branch of St. Mary River in St. Mary County.
- Cooper**; village in Harford County.
- Coopstown**; village in Harford County.
- Copperville**; village in Talbot County.
- Corbett**; post village in Baltimore County on the Northern Central Railway.
- Corbin**; village in Worcester County.
- Cordova**; post village in Talbot County on the Philadelphia, Baltimore and Washington Railroad.
- Corkers**; creek, a tributary of Pocomoke River in Worcester County.
- Cormon**; point in Somerset County, projecting into Manokin River.
- Corners**; wharf on Choptank River in Dorchester County.
- Cornersville**; post village in Dorchester County.
- Cornfield**; harbor, a small inlet of Potomac River in St. Mary County.
- Cornfield**; point in St. Mary County, projecting into Potomac River.
- Corn Hammock**; a small inlet in Assawoman Bay in Worcester County.
- Corriganville**; post village in Allegany County.
- Corsica**; river, a small tributary of Chester River in Queen Anne County.
- Costen**; station in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Cottage Grove**; village in Somerset County.
- Cotter**; cove, a small inlet of Chincoteague Bay in Worcester County.
- Cottingham**; ferry on Pocomoke River in Worcester County.
- Counallor**; point in Anne Arundel County, projecting into West River.
- Courthouse**; point in Cecil County, projecting into Elk River.
- Cove**; point in Calvert County, projecting into Chesapeake Bay. A light-house is erected thereon.
- Cove**; post village in Garrett County.
- Cove**; run, a small branch of Bear Creek in Garrett County.
- Covepoint**; post village in Calvert County.
- Covey**; creek, a small inlet of Trippe Bay in Dorchester County.
- Cow**; creek, a small tributary of Nanticoke River in Dorchester County.
- Cowentown**; post village in Cecil County.
- Cox**; creek, a small stream flowing into Eastern Bay in Queen Anne County.
- Cox**; creek, a small tributary of West River in Anne Arundel County.
- Cox**; creek, a small tributary of Patapsco River in Anne Arundel County.
- Cox**; neck, a strip of land between Cox and Crab Alley creeks in Queen Anne County.
- Cox**; point in Baltimore County, projecting into Back River.
- Cox**; post village in Calvert County on the Philadelphia, Baltimore and Washington Railroad.

**Crab**; point in Dorchester County, projecting into Honga River.

**Crab**; run, a small tributary of Castleman River in Garrett County.

**Crab Alley**; creek, a small stream flowing into Eastern Bay in Queen Anne County.

**Crab Alley**; neck, a strip of land between Crab Alley Creek and Prospect Bay in Queen Anne County.

**Crabs**; small branch of Rock Creek in Montgomery County.

**Crabtree**; creek, a small tributary of Savage River in Garrett County.

**Craigtown**; village in Cecil County.

**Crampton**; gap in the Blue Ridge Mountains in Frederick County.

**Cranberry**; run, a small tributary of Patapsco River in Carroll County.

**Crane**; cove, a small inlet of Big Annemessex Bay in Somerset County.

**Crapo**; post village in Dorchester County.

**Creagerstown**; village in Frederick County.

**Crellin**; post village in Garrett County.

**Cremona**; creek, a small tributary of Patuxent River in St. Mary County.

**Cresaptown**; post village in Allegany County.

**Creswell**; village in Harford County.

**Cristfield**; town in Somerset County. Population, 3,165.

**Crocheron**; post village in Dorchester County.

**Cromleys Mountain**; village in Cecil County.

**Cromwell**; village in Anne Arundel County.

**Cronhardt**; post village in Baltimore County.

**Cropley**; post village in Montgomery County.

**Cropper**; small, almost entirely marshy island in Newport Bay in Worcester County.

**Crooked**; run, a small branch of North Branch of Potomac River in Garrett County.

**Croom Station**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Crosby**; village in Kent County.

**Crosierdoer**; creek, a small tributary of Choptank River in Talbot County.

**Cross**; creek, a small tributary of South River in Anne Arundel County.

**Crossroads**; post village in Charles County.

**Crownsville**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.

**Crumpton**; village in Queen Anne County. Population, 207.

**Cub Hill**; village in Baltimore County.

**Cuckold**; creek, a small branch of Patuxent River in St. Mary County.

**Cuckold**; creek, a small branch of Mill Creek in St. Mary County.

**Cuckold**; creek, a small branch of Potomac River in Charles County.

**Cuckold**; point in Baltimore County, projecting into Back River.

**Cumberland**; county seat of Allegany County on the Baltimore and Ohio, the Cumberland and Pennsylvania, the George's Creek and Cumberland, the Pennsylvania, and the West Virginia Central and Pittsburg railroads. Population, 17,128.

**Cumberstone**; post village in Anne Arundel County.

**Cummings**; creek, a small branch of Harris Creek in Talbot County.

**Curtail**; small branch of Monocacy River in Frederick County.

**Curtis**; creek, a tributary to Curtis Bay in Anne Arundel County.

**Curtis**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Curtis Bay Junction**; village in Baltimore County on the Baltimore and Ohio Railroad.

**Cutmaptico**; creek, a small tributary of Wicomico River in Wicomico County.

**Cylburn**; village in Baltimore County on Northern Central Railway.

**Cypress**; branch, a small tributary of Chester River in Kent County.

**Dailsville**; village in Dorchester County.

**Daisy**; post village in Howard County.



- Dan**; run, a small tributary of North Branch of Potomac River in Allegany County.
- Daniel**; village in Carroll County.
- Dans**; mountain, a summit of Allegany Front in Allegany County with a maximum altitude of 2,882 feet in Dans Rock, and a rise of over 2,000 feet above the North Branch of Potomac River, which is at its base.
- Dans Rock**; summit in Dans Mountain in Allegany County. Height, 2,882 feet.
- Damascus**; town in Montgomery County. Population, 148.
- Dames Quarter**; creek, a small tributary of Wicomico River in Somerset County.
- Dames Quarter**; post village in Somerset County.
- Dar**; post village in Baltimore County.
- Dares Wharf**; post village in Calvert County.
- Dargan**; post village in Washington County.
- Dark Hollow**; run, a small branch of Whitemarsh Run in Baltimore County.
- Darlington**; village in Harford County. Population, 260.
- Darnall**; post village in Anne Arundel County.
- Darnestown**; post village in Montgomery County.
- Davidsonville**; post village in Anne Arundel County.
- Davis**; creek, a small tributary of Choptank River in Dorchester County.
- Davis**; creek, a small branch of Langford Bay in Kent County.
- Davis**; station in Howard County on the Baltimore and Ohio Railroad.
- Davisonville**; post village in Montgomery County.
- Dawson**; post village in Allegany County.
- Dawsonville**; village in Montgomery County.
- Days**; point in Harford County, projecting into Gunpowder River.
- Daysville**; village in Frederick County.
- Dayton**; post village in Howard County.
- Deal**; island in Tangier Sound in Somerset County, nearly half of which is sea marsh.
- Deale**; post village in Anne Arundel County.
- Deal Island**; post village in Somerset County.
- Deep**; cove, a small inlet of Chester River in Kent County.
- Deep**; creek, a small stream flowing through Howard and Baltimore counties into Patapsco River.
- Deep**; creek, a small stream in St. Mary County flowing into Chesapeake Bay.
- Deep**; creek, a small tributary of Back River in Baltimore County.
- Deep**; creek, a small branch of Broad Creek in Harford County.
- Deep**; creek, a small stream in Anne Arundel County flowing into Chesapeake Bay.
- Deep**; creek, a small tributary of Magothy River in Anne Arundel County.
- Deep**; creek, a tributary of Youghiogheny River in Garrett County.
- Deep**; landing on Patuxent River in Calvert County.
- Deep**; neck, a strip of land between Edge and Irish creeks in Talbot County.
- Deep**; point in Charles County, projecting into Potomac River.
- Deep**; point projecting into Chesapeake Bay in St. Mary County.
- Deep**; point in Kent County, projecting into Chester River.
- Deep**; point in Queen Anne County, projecting into Chester River.
- Deep**; run, a stream on boundary between Howard and Anne Arundel counties, a tributary of Patapsco River.
- Deep Banks**; small marshy island in Holland Straits in Somerset County.
- Deep Neck**; point in Talbot County, projecting into Broad Creek.
- Deer**; creek, a tributary of Susquehanna River rising in Pennsylvania and flowing across the northeast corner of Baltimore County into Harford County.
- Deercreek**; post village in Harford County.
- Deer Park**; town in Garrett County on the Baltimore and Ohio Railroad. Population, 203.
- Delight**; village in Baltimore County.
- Delmar**; town in Wicomico County. Population, 659.

**Dennings**; village in Carroll County.

**Dennis**; creek, a small branch of Quantico Creek in Wicomico County.

**Denton**; county seat of Caroline County. Population, 900.

**Dentsville**; post village in Charles County.

**Derwood**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**De Sales**; village in Baltimore County.

**Detmold**; hill on boundary between Garrett and Allegany counties.

**Devil**; small marshy island in Assawoman Bay in Worcester County.

**Devil Nest**; creek, a small tributary of Zekiah Swamp in Charles County.

**Dick**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.

**Dickens**; post village in Allegany County.

**Dickerson**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Ditch**; run, a small tributary of Potomac River in Washington County.

**Dividing**; creek, a tributary of Pocomoke River on boundary between Somerset and Worcester counties.

**Dobbin**; two small islands in Magothy River in Anne Arundel County.

**Dodson**; post village in Garrett County.

**Dog**; mountain ridge in Garrett County.

**Dog and Bitch**; small marshy island in Isle of Wight Bay in Worcester County.

**Dogwood**; small branch of Little Elk River in Cecil County.

**Dogwood**; small tributary of Patapsco River in Baltimore County.

**Dominion**; village in Queen Anne County.

**Doncaster**; post village in Charles County.

**Dorchester**; county, organized in 1669; extends from Chesapeake Bay to the Delaware state line, and is bounded on the southeast by Nanticoke River and on the north by Choptank River. The surface is generally level, although the upper part of the county undulates considerably. The area is 608 square miles, of which more than a third, or 128,160 acres, was under cultivation in 1900. The population for the same year was 27,962. The county seat is Cambridge, a town of about 5,000 inhabitants, while the next town in size is East Newmarket, which had a population of 1,267 in 1900. The average magnetic declination in the county in 1900 was 5° 35' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 55° and 60°.

**Dorsey**; post village in Howard County on the Baltimore and Ohio Railroad.

**Dorseys**; run, a small tributary of Little Patuxent River in Howard and Anne Arundel counties.

**Dorseys**; run, a small tributary of Patapsco River in Howard County.

**Dorseys Run**; station in Howard County on the Baltimore and Ohio Railroad.

**Double Bridge**; branch, a small tributary of Pocomoke River in Worcester County.

**Double Lick**; run, a small branch of Blackhawk Run in Garrett County.

**Double Pipecreek**; post village in Carroll County on the Western Maryland Railroad.

**Doubs**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Douglass**; run, a small branch of Cherry Run in Garrett County.

**Dougherty**; creek, a small tributary of Big Annemessex River in Somerset County.

**Doughoregan**; post village in Howard County.

**Downes**; post village in Caroline County on the Queen Anne's Railroad.

**Downesville**; post village in Washington County.

**Dove**; cove, a small inlet of Bush River in Harford County.

**Drawbridge**; post village in Dorchester County.

**Drayden**; post village in St. Mary County.

**Druid**; lake, in Druid Hill Park, a suburb of Baltimore City within its chartered limits



- Druid Hill Park**; principal park of Baltimore City.
- Drum**; point in Baltimore County, projecting into Back River.
- Drum**; point in Calvert County, projecting into Patuxent River.
- Drum**; point in Somerset County, projecting into Manokin River.
- Drum**; point in Somerset County, projecting into Tangier Sound.
- Drum**; point in Worcester County, projecting into Assawoman Bay.
- Drum**; point in Worcester County, projecting into Isle of Wight Bay.
- Drumcliff**; post village in St. Mary County.
- Drum Point**; cove, a small inlet of Manokin River in Somerset County.
- Drum Point**; village in Calvert County.
- Drunkard Lick**; run, a small tributary of Youghiogheny River in Garrett County.
- Drury**; post village in Anne Arundel County.
- Dry**; run, a small tributary of Savage River in Garrett County.
- Drybranch**; village in Harford County.
- Dry Seneca**; creek, a small branch of Seneca Creek in Montgomery County.
- Dublin**; post village in Harford County.
- Dublin**; village in Somerset County.
- Dubois**; post village in Charles County.
- Duck Point**; cove, a small inlet of Honga River in Dorchester County.
- Duffield**; village in Charles County.
- Duffy**; creek, a small tributary of Sassafras River in Cecil County.
- Dulaney**; creek, a small tributary of Gunpowder Falls in Baltimore County.
- Dulaney Valley**; post village in Baltimore County.
- Duley**; post village in Prince George County.
- Dun**; cove, a small inlet of Harris Creek in Talbot County.
- Dung**; creek, a small tributary of Nanticoke River in Wicomico County.
- Dunghill**; summit in Negro Mountain in Garrett County.
- Dunkirk**; post village in Calvert County.
- Dunnock**; island, a bit of elevated dry land in the sea marshes of Dorchester County.
- Durden**; creek, a small tributary of Chester River in Kent County.
- Dutch**; small island in Susquehanna River in Harford County.
- Duvall**; creek, a small tributary of Whitehall River in Anne Arundel County.
- Duvall**; creek, a small tributary of South River in Anne Arundel County.
- Dynard**; post village in St. Mary County.
- Eagle**; hill in Anne Arundel County.
- Eagle**; small marshy island in St. Martin River in Worcester County.
- Eagle**; rock, a summit in Backbone Mountain in Garrett County. Height, 3,162 feet.
- Eakles Mills**; post village in Washington County on the Baltimore and Ohio Railroad.
- Eakton Mills**; village in Frederick County.
- Earleigh Heights**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Earlton**; post village in Harford County.
- Earlville**; post village in Cecil County.
- East**; branch, a small tributary of Little Elk River in Cecil County.
- East**; small branch of Winters Creek in Harford County.
- East**; creek, a small tributary of Pocomoke River in Somerset County.
- East**; run, a small tributary of St. Mary River in St. Mary County.
- Eastern**; bay, an arm of Chesapeake Bay on boundary between Queen Anne and Talbot counties.
- Eastern**; neck, a strip of land between Chesapeake Bay and Chester River in Kent County.
- Eastern Neck**; small island at mouth of Chester River in Kent County.

**East New Market**; town in Dorchester County. Population, 1,267.

**Easton**; county seat of Talbot County, on the Baltimore, Chesapeake and Atlantic and the Philadelphia, Baltimore and Washington railroads. Population, 3,074.

**Easton**; point in Talbot County, projecting into Tred Avon River.

**Eastport**; post village in Anne Arundel County.

**Eber**; village in Cecil County.

**Eckhart Mines**; post village in Allegany County.

**Eden**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Edesville**; post village in Kent County.

**Edge**; creek, a small branch of Broad Creek, in Talbot County.

**Edgemont**; post village in Washington County on the Western Maryland Railroad.

**Edgewater**; post village in Anne Arundel County.

**Edgewood**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.

**Ednor**; post village in Montgomery County.

**Edwards Ferry**; post village in Montgomery County.

**Edwin**; post village in Somerset County.

**Egg**; hill in Cecil County. Height, 442 feet.

**Eklo**; village in Baltimore County.

**Elbow**; small branch of Deer Creek in Harford County.

**Elbow**; hill in bend of Savage River in Garrett County.

**Elbow**; mountain, between Savage River and Big Savage River in Garrett County.

**Elbow**; ridge, small mountain ridge in Washington County.

**Elder**; post village in Garrett County.

**Eldersburg**; village in Carroll County.

**Elioak**; post village in Howard County.

**Elk**; neck, between Elk and Northeast rivers in Cecil County.

**Elk**; river in Cecil County tributary to Chesapeake Bay.

**Elklick**; run, a small branch of Georges Creek in Allegany County.

**Elk Lick**; run, a small tributary of Savage River in Garrett County.

**Elkneck**; post village in Cecil County.

**Elkridge**; village in Howard County on Baltimore and Ohio Railroad.

**Elkton**; county seat of Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 2,542.

**Elkton**; landing on Elk River in Cecil County.

**Ellerslie**; post village and station in Allegany County on the Baltimore and Ohio Railroad.

**Ellicott**; county seat of Howard County on the Baltimore and Ohio Railroad. Population, 1,331.

**Elliott**; island, a tract of elevated dry land in sea marshes of Dorchester County.

**Elliott**; post village in Dorchester County on Elliott Island.

**Ellis**; bay, an inlet at mouth of Wicomico River in Wicomico County, into which flows Broad Creek.

**Ellwood**; post village in Dorchester County.

**Elmer**; post village in Montgomery County.

**Elsio**; post village in Baltimore County.

**Elvaton**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Emmitsburg**; town in Frederick County on the Emmitsburg Railroad. Population, 849.

**Emmorton**; post village in Harford County.

**Emory**; cove, a small inlet of Corsica River in Queen Anne County.

**Emory**; post village in St. Mary County.

**Emory Grove**; post village in Baltimore County on the Western Maryland Railroad.

**Engle Mills**; post village in Garrett County.

**Ernstville**; village in Washington County.

**Etchison**; post village in Montgomery County.

**Evans**; hill in Garrett County.

**Evitts**; creek, a small branch of North Branch of Potomac River in Allegany County.

**Evitts**; mountain, a small mountain ridge in Allegany County.

**Evna**; village in Baltimore County.

**Ewell**; post village in Somerset County.

**Exline**; village in Washington County.

**Fairbank**; post village in Talbot County.

**Fairhaven**; post village in Anne Arundel County.

**Fairhill**; post village in Cecil County.

**Fairland**; post village in Montgomery County.

**Fairlee**; creek, a small stream in Kent County flowing into Chesapeake Bay.

**Fairlee**; post village in Kent County.

**Fairmont**; post village in Somerset County.

**Fair Sweep**; village in Garrett County.

**Fairview**; point in Harford County, projecting into Bush River.

**Fairview**; post village in Washington County on the Western Maryland Railroad.

**Fairview**; village in Talbot County.

**Falling**; small branch of Deer Creek in Harford County.

**Fallston**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Far**; creek, a small tributary of Honga River in Dorchester County.

**Farhole**; creek, a small tributary of Tred Avon River in Talbot County.

**Farm**; creek, a small stream in Dorchester County flowing into Fishing Bay.

**Farmington**; landing on Piscataway Creek in Prince George County.

**Farmington**; post village in Cecil County.

**Fassett**; point in Dorchester County, projecting into Sinepuxent Bay.

**Faulkner**; post village in Charles County.

**Fearer**; post village in Garrett County.

**Federal**; hill in Allegany County. Height, 2,106 feet.

**Federal Hill**; village in Harford County.

**Federalsburg**; village in Caroline County on the Philadelphia, Baltimore and Washington Railroad. Population, 539.

**Federal Spring**; small branch of Western Branch in Prince George County.

**Feik**; run, a small branch of Bear Creek in Garrett County.

**Fenwick**; creek, a small tributary of Wicomico River in Charles county.

**Ferry**; landing on Patuxent River in Prince George County.

**Ferry**; neck, a strip of land between Tred Avon River and Broad Creek in Talbot County.

**Ferry**; point in Baltimore County, projecting into Patapsco River.

**Ferry**; point in Anne Arundel County, projecting into Curtis Bay.

**Ferry**; point of Anne Arundel County, projecting into South River.

**Fifteenmile**; creek, a tributary of Potomac River in Allegany County.

**Finksburg**; post village in Carroll County on the Western Maryland Railroad.

**Finzel**; post village in Garrett County.

**First Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Fishing**; bay, an arm of Chesapeake Bay in Dorchester County.

**Fishing**; creek, a small stream flowing into Chesapeake Bay in Calvert County.

**Fishing**; creek, a small tributary of Honga River in Dorchester County.

- Fishing**; creek, a small tributary of Manokin River in Somerset County.
- Fishing**; island, a bit of elevated dry land in sea marshes of Somerset County.
- Fishing**; point in Somerset County, projecting into Manokin River.
- Fishing**; point in Anne Arundel County, projecting into Curtis Bay.
- Fishing**; point, the western extremity of Elliott Island in Dorchester County, projecting into Fishing Bay.
- Fishing**; point in St. Mary County, projecting into Patuxent River.
- Fishing**; point on Smith Island in Somerset County, projecting into Chesapeake Bay.
- Fishing Creek**; post village in Dorchester County.
- Five Forks**; village in Baltimore County.
- Five Points**; village in Wicomico County.
- Flat**; creek, a small branch of Middle Creek in Frederick County.
- Flatcap**; point in Somerset County, projecting into Big Annemessex River.
- Flatland**; cove, a small inlet near mouth of Big Annemessex River in Somerset County.
- Flintstone**; post village in Allegany County.
- Flintville**; post village in Harford County.
- Flood**; creek, a small branch of Potomac River in St. Mary County.
- Florence**; post village in Howard County.
- Fog**; point on Smith Island in Somerset County, projecting into Chesapeake Bay.
- Fog Point**; cove, a small inlet of Hedge Straits on Smith Island in Somerset County.
- Folly**; small branch of Western Branch in Prince George County.
- Folly**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Fooks**; pond in Wicomico County drained by Tonytank Creek, a tributary of Wicomico River.
- Fooks School**; village in Wicomico County.
- Ford**; point in Harford County, projecting into Chesapeake Bay.
- Fords**; landing on Elk River in Cecil County.
- Fords**; wharf on Muddy Creek in Somerset County.
- Ford Store**; post village in Queen Anne County.
- Foreman**; landing on Wye River in Queen Anne County.
- Forest Glen**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Foresthill**; post village in Harford County.
- Forestville**; village in Prince George County.
- Fork**; creek, a small tributary of Savage River in Garrett County.
- Fork**; post village in Baltimore County.
- Fork of Owens**; creek, a small tributary of Monocacy River in Frederick County.
- Formans**; branch, a small tributary of Chester River in Queen Anne County.
- Fort**; hill, in Allegany County. Height, 1,621 feet.
- Fort**; point in St. Mary County, projecting into St. Mary River.
- Fort Foote**; fort in Prince George County on Potomac River.
- Fort Frederick**; fort in Washington County.
- Fort McHenry**; fort on Potapscow River within chartered limits of Baltimore city.
- Fort Pendleton**; fort in Garrett County.
- Fort Republic**; village in Calvert County.
- Fort Washington**; post village in Prince George County on Potomac River.
- Foster**; branch, a small tributary of Bush River in Harford County.
- Fountain Green**; post village in Harford County.
- Fourmile**; mountain ridge separating Muddick Run and Savage River in Garrett County.

- Fourth Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.
- Fowblesburg**; post village in Baltimore County on the Western Maryland Railroad.
- Fowling**; creek, a small tributary of Choptank River in Caroline County.
- Fowling Creek**; post village in Caroline County.
- Fox**; run, a small branch of Cherry Run in Garrett County.
- Foys**; hill in Cecil County. Height, 300 feet.
- Frankford**; village in Wicomico County.
- Franklin**; branch, a small tributary of Pocomoke River in Worcester County.
- Franklin**; point in Anne Arundel County, projecting into Chesapeake Bay.
- Franklin**; village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Franklin**; village in Baltimore County.
- Franklinville**; post village in Baltimore County.
- Frazier**; post village in Calvert County.
- Frederick**; city, county seat of Frederick County on the Baltimore and Ohio Railroad. Population, 9,296.
- Frederick**; county, bounded on the north by Pennsylvania, on the east by Carroll County, southeast by Montgomery County, west by Blue Ridge Mountains, and south by Potomac River. The surface is undulating, partly mountainous; the Catoctin Mountains dividing the county into two broad valleys, that to the westward being drained by Catoctin River and its branches and the one eastward by Monocacy River, both rivers flowing into Potomac River. The area of the county is 662 square miles, nearly three-fourths of which, or 308,041 acres, being under cultivation in 1900. The population for the same year was 51,920. The county seat and principal city is Frederick, a town of about 9,300 inhabitants. It also contains Brunswick, a town of about 2,500 inhabitants. The average magnetic declination in the county in 1900 was 5° 10' west. The annual rainfall commonly ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.
- Frederick Junction**; station in Frederick County on the Baltimore and Ohio Railroad.
- Fredericktown**; village in Cecil County.
- Freedom**; village in Carroll County.
- Freeland**; post village in Baltimore County on the Northern Central Railway.
- Freeman**; creek, a small tributary of Sassafras River in Kent County.
- Freetown**; village in Somerset County.
- Frenchtown**; village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Friendly**; post village in Prince George County.
- Friendship**; post village in Anne Arundel County.
- Friendship**; suburb of Baltimore City within its chartered limits.
- Friendship**; village in St. Mary County.
- Friendship**; station in Worcester County on the Philadelphia, Baltimore and Washington Railroad.
- Friendsville**; post village in Garrett County on the Baltimore and Ohio Railroad.
- Frog**; hollow in Collier Mountain in Allegany County.
- Frog**; point in Dorchester County, projecting into Nanticoke River.
- Frogeye**; village in Somerset County.
- Frogtown**; village in Harford County.
- Front Wye**; river on boundary between Queen Anne and Talbot counties, a tributary of Wye River.
- Frost**; village in Anne Arundel County.
- Frostburg**; town in Allegany County on the Cumberland and Pennsylvania Railroad. Population, 5,274.

**Frosts**; village in Allegany County on the West Virginia Central and Pittsburg Railroad.

**Frozen Camp**; run, a small branch of Cherry Run in Garrett County.

**Fruitland**; post village in Wicomico County on the New York, Philadelphia and Norfolk Railroad.

**Fryers**; wharf on Sassafras River in Kent County.

**Fryingpan**; cove, a small inlet of Chester River in Kent County.

**Fulford**; post village in Harford County.

**Fullerton**, post village in Baltimore County.

**Fulton**; post village in Howard County.

**Funkstown**; town in Washington County. Population, 559.

**Furnace**; creek, a small tributary of Chesapeake Bay.

**Furnace**; creek, a small branch of Curtis Creek in Anne Arundel County.

**Furnace**; creek, a small tributary of Potomac River in Frederick County.

**Furnace**; village in Harford County.

**Furnace**; village in Worcester County.

**Gab**; small island at mouth of Lighting Knot Cove in Somerset County.

**Gaither**; post village in Carroll County.

**Gaithersburg**; town in Montgomery County on the Baltimore and Ohio Railroad. Population, 547.

**Galena**; town in Kent County. Population, 251.

**Gales**; creek, a small branch of Rhode River in Anne Arundel County.

**Gales**; creek, a small tributary of Big Annemessex River in Somerset County.

**Gales**; wharf on Worton Creek in Kent County.

**Galestown**; post village in Dorchester County.

**Gallant Green**; post village in Charles County on the Washington, Potomac and Chesapeake Railroad.

**Galloway**; creek, a small branch of Middle Creek in Baltimore County.

**Galloway**; point in Baltimore County, projecting into Middle River.

**Galloways**; post village in Anne Arundel County.

**Gambage**; small marshy island in Turville Creek in Worcester County.

**Gamber**; village in Carroll County.

**Gambrills**; post village on the Annapolis, Washington and Baltimore Railroad.

**Gapland**; post village in Washington County on the Baltimore and Ohio Railroad.

**Garland**; post village in Harford County.

**Garrett**; county, bounded on the north by Pennsylvania, on the east by Washington County, on the south by the North Branch of Potomac River, and on the west by West Virginia. The county is comprised mainly in the Allegany Plateau, having an undulating surface with an average altitude not far from 2,500 feet, and rising to a mountain range above the North Branch of Potomac River, known as Backbone Mountain, which has an extreme height of 3,400 feet and an average altitude of 3,000 feet. The northwest part is drained by Youghiogheny River to the Ohio and the southeast part by North Branch of the Potomac. The area is 240 square miles, of which less than 30 per cent, or 123,932 acres, was under cultivation in 1900. The population for the same year was 17,701. The county seat is Oakland, with a population of 2,170 in 1900. The average magnetic declination in the county in 1900 was 3° 45'. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 45° and 50°.

**Garrett**; small island in Susquehanna River in Cecil County.

**Garrett Park**; town in Montgomery County on the Baltimore and Ohio Railroad. Population, 175.

**Garrison**; post village in Baltimore County.

**Gary**; post village in Howard County.

- Gasheys**; creek, a small branch of Swan Creek in Harford County.
- Geanquakin**; creek, a small tributary of Manokin River in Somerset County.
- Gem Mills**; village in Baltimore County.
- Gentsville**; village in Baltimore County.
- George**; hill in Garrett County. Height, 3,004 feet.
- Georges**; creek, a tributary of North Branch of Potomac River on boundary between Allegany and Garrett counties.
- Georges**; creek, a small tributary of Gunpowder Falls in Baltimore County.
- Georges Island**; landing in Worcester County on Chincoteague Bay.
- Georgetown**; post village in Kent County.
- German**; creek, a small branch of Tuckahoe Creek in Queen Anne County.
- Germantown**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Gibson**; small island in Chesapeake Bay in Anne Arundel County.
- Gibson**; village in Harford County.
- Gilbert**; run, a small stream in Charles County tributary to Gilbert Swamp.
- Gilbert**; swamp, a small marshy stream flowing into Wicomico River in Charles County.
- Gillens Falls**; small branch of South Branch of Patapsco River in Carroll County.
- Gilmore**; post village in Allegany County.
- Gilpen**; post village in Allegany County.
- Ginrichs**; station in Baltimore County on the Western Maryland Railroad.
- Girdletree**; town in Worcester County on the Philadelphia, Baltimore and Washington Railroad. Population, 336.
- Gise**; village in Garret County.
- Gist**; village in Kent County.
- Gittings**; post village in Baltimore County.
- Givens**; branch, a small stream draining Adkins Pond and flowing into Pocomoke River in Wicomico County.
- Glade**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Gladstone**; branch, a small tributary of Nanticoke River in Dorchester County.
- Glebe**; creek, a small tributary of Miles River in Talbot County.
- Glebe**; creek, a small branch of South River in Anne Arundel County.
- Glen**; post village in Montgomery County.
- Glenarm**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Glenburnie**; station in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Glencoe**; post village in Baltimore County on the Northern Central Railway.
- Glen Cove**; village in Harford County.
- Glen Echo**; post village in Montgomery County.
- Glenelg**; post village in Howard County.
- Glen Falls**; station in Baltimore County on the Western Maryland Railroad.
- Glen Morris**; post village in Baltimore County on the Western Maryland Railroad.
- Glennedale**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Glenville**; post village in Harford County.
- Glenwood**; post village in Howard County.
- Glymont**; post village in Charles County.
- Glyndon**; post village in Baltimore County on the Western Maryland Railroad.
- Gods Grace**; point in Calvert County, projecting into Patuxent River.
- Goldenhill**; post village in Dorchester County.
- Golden Ring**; station in Baltimore County on the Baltimore and Ohio Railroad.
- Goldsboro**; creek, a small tributary of Tred Avon River in Talbot County.



**Goldsboro**; post village in Caroline County.

**Golts**; post village and station in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Good Luck**; village in Prince George County.

**Goodwill**; village in Worcester County.

**Goody Hill**; small branch of Basset Creek in Worcester County.

**Goose**; creek, a small stream in Somerset County flowing into Kedge Strait.

**Goose**; creek, a small tributary of Manokin River in Somerset County.

**Goose**; creek, a small stream in Dorchester County flowing into Fishing Bay.

**Goose**; creek, a small tributary of Choptank River in Dorchester County.

**Goose**; point in Worcester County, projecting into Sinepuxent Bay.

**Goose**; pond forming a small inlet of Assawoman Bay in Worcester County.

**Goose**; pond in Anne Arundel County having outlet into Chesapeake Bay.

**Gordon**; point in Queen Anne County, projecting into Chester River.

**Gorman**; village in Garrett County.

**Gorsuch**; post village in Carroll County on the Baltimore and Ohio Railroad.

**Gorsuch Mills**; village in Baltimore County.

**Gortner**; post village in Garrett County.

**Goshen**; creek, a small tributary of Great Seneca Creek in Montgomery County.

**Goshen**; post village in Montgomery County.

**Governor Run**; post village in Calvert County.

**Grace**; creek, a small branch of Broad Creek in Talbot County.

**Grace**; point in Baltimore County, projecting into Bush River.

**Graceham**; post village in Frederick County on the Western Maryland Railroad.

**Grafton**; village in Charles County.

**Grafton Shops**; village in Harford County.

**Graney**; creek, a small tributary to Chesapeake Bay in Queen Anne County.

**Grange**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Granite**; post village in Baltimore County.

**Grantsville**; town in Garrett County. Population, 175.

**Grassy**; small marshy island in Isle of Wight Bay in Worcester County.

**Gratitude**; post village in Kent County.

**Gravelly**; point in Dorchester County, projecting into Nanticoke River.

**Graveyard**; creek, a small branch of Deer Creek in Harford County.

**Graveyard**; creek, a small tributary of Severn River in Anne Arundel County.

**Gray**; point in St. Mary County, projecting into Potomac River.

**Grays**; hill in Cecil County. Height, 268 feet.

**Grays**; island, a bit of elevated dry land in sea marshes of Dorchester County.

**Grays Corner**; village in Worcester County.

**Grays Inn**; creek, a small tributary of Chester River in Kent County.

**Grayton**; post village in Charles County.

**Great**; bay, a small inlet of Tar Bay in Dorchester County.

**Great**; cove, a small inlet of Tangier Sound in Dorchester County.

**Great**; falls in the Potomac River between Fairfax County, Va., and Montgomery County.

**Great Bohemia**; creek, rises in Delaware and flows through Cecil County into Bohemia River.

**Great Egging**; beach, on sand bar separating Sinepuxent Bay from the Atlantic Ocean in Worcester County.

**Greatfalls**; post village in Montgomery County.

**Great Marsh**; point in Talbot County, projecting into Chesapeake Bay.

**Great Mills**; post village in St. Mary County.

**Great Seneca**; creek, a tributary of Potomac River in Montgomery County.



- Great Tonoloway**; creek, a small branch of Potomac River in Washington County.
- Green**; point in Worcester County, projecting into Sinepuxent Bay.
- Green**; run, a small tributary of Pocomoke River in Wicomico County.
- Green**; mountain ridge separating Town Creek from Purstane Run in Allegany County.
- Greenbury**; point in Anne Arundel County, projecting into Annapolis Roads.
- Greenbush**; point in Cecil County, projecting into Elk River.
- Greenfield Mills**; village in Frederick County.
- Green Glade**; run, a small branch of Deep Creek in Garrett County.
- Greenhill**; village in Somerset County.
- Greenhurst**; post village in Cecil County.
- Green Marsh**; point in Baltimore County, projecting into Back River.
- Greenmound**; post village in Carroll County on the Western Maryland Railroad.
- Greenock**; post village in Anne Arundel County.
- Green Point**; wharf in Kent County on Worton Creek.
- Greens**; branch, a small tributary of Gunpowder Falls in Baltimore County.
- Greensboro**; town in Caroline County on the Philadelphia, Baltimore and Washington Railroad. Population, 641.
- Green Spring**; village in Baltimore County.
- Green Spring Junction**; station in Baltimore County on the Northern Central and Western Maryland railroads.
- Green Valley**; village in Frederick County.
- Greenwood**; creek, a small stream in Queen Anne County flowing into Eastern Bay.
- Greenwood**; post village in Baltimore County on the Western Maryland Railroad.
- Greys**; creek, a small stream in Worcester County flowing into Assawoman Bay.
- Greys**; small inlet of Newport Bay in Worcester County.
- Greystone**; village in Baltimore County.
- Griffin**; post village in Caroline County.
- Grifton**; post village in Montgomery County.
- Grimes**; creek, a small tributary of Nanticoke River in Wicomico County.
- Grimes**; post village in Washington County on the Norfolk and Western Railway.
- Grove**; small tributary of Chester River in Queen Anne County.
- Grove**; neck, a strip of land between Sassafras River and Pond Creek in Cecil County.
- Grove**; point in Cecil County, projecting into mouth of Sassafras River.
- Grove**; post village in Caroline County on the Norfolk and Western Railway.
- Guard**; post village in Garrett County.
- Guest**; point in St. Mary County, projecting into St. Clement Bay.
- Guilford**; post village in Howard County.
- Gum**; point in Kent County, projecting into Chester River.
- Gumbridge**; branch, a small tributary of Pocomoke River in Worcester County.
- Gum Swamp**; village in Dorchester County.
- Gunby**; creek, a small tributary to Pocomoke Sound in Somerset County.
- Gunner**; creek, a small branch of Great Seneca Creek in Montgomery County.
- Gunpowder**; neck, a strip of land between Gunpowder and Bush rivers in Harford County.
- Gunpowder**; river, a large estuary on boundary between Harford and Baltimore counties flowing into Chesapeake Bay.
- Gunpowder Falls**; river, a tributary of Gunpowder River in Baltimore County.
- Guys**; village in Queen Anne County.
- Gwynnbrook**; post village in Baltimore County.
- Gwynns Falls**; creek in Baltimore County near Baltimore; flows into Middle Branch of Patapsco River.
- Habnab**; post village in Somerset County.
- Hackett**; point in Anne Arundel County, projecting into Annapolis Roads.

**Hagerstown**; county seat of Washington County on the Baltimore and Ohio, the Cumberland Valley, the Norfolk and Western, and the Western Maryland railroads. Population, 13,591.

**Haha**; small branch of Otter Point Creek in Harford County.

**Haight**; village in Carroll County.

**Hail**; creek, a small tributary of Chester River in Kent County.

**Hail**; point in Kent County, projecting into Chester River.

**Haines**; point in Somerset County, projecting into Tangier Sound.

**Halethorp**; post village in Baltimore County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.

**Halfway**; post village in Washington County on the Cumberland Valley Railroad.

**Hall**; creek, a small tributary of Patuxent River in Calvert County.

**Hall**; creek, a small stream in Somerset County flowing into Big Annemessex River.

**Hall**; point in Somerset County, projecting into Tangier Sound.

**Hall**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Hallowing**; point in Calvert County, projecting into Patuxent River.

**Halls**; hill, a summit in Hoop Pole Mountain Ridge in Garrett County. Height, 2,700 feet.

**Halls**; post village in Prince George County.

**Halpine**; station in Montgomery County on the Baltimore and Ohio Railroad.

**Hambleton**; creek, a small tributary of Chester River in Queen Anne County.

**Hambleton**; creek, a small branch of Miles Creek in Talbot County.

**Hambleton**; small island in Broad Creek in Talbot County.

**Hambleton**; post village in Talbot County.

**Hambrook**; sand bar in Choptank River in Dorchester County.

**Hamburg**; village in Frederick County.

**Hammock**; point in Somerset County, projecting into Little Annemessex River.

**Hammond**; branch, a tributary of Little Patuxent River in Howard County.

**Hampden**; suburb of Baltimore city within its chartered limits.

**Hampstead**; post village in Carroll County on the Western Maryland Railroad.

**Hance**; point in Cecil County, projecting into Northeast River.

**Hancock**; run, a small branch of Nanjemoy Creek in Charles County.

**Hancock**; town in Washington County; population, 824.

**Handys**; hammock, a bit of marsh in Newport Bay in Worcester County.

**Hanesville**; post village in Kent County.

**Hanover**; post village in Howard County on Baltimore and Ohio Railroad.

**Hansonville**; village in Frederick County.

**Happy Valley**; branch, a small tributary of Susquehanna River in Cecil County.

**Harbor**; cove, a small inlet of Eastern Bay in Talbot County.

**Hardesty**; post village in Prince George County.

**Hardship**; branch, a small tributary of Pocomoke River in Worcester County.

**Hardys Hole**; passage between Mills Island and a small adjacent island in Chincoteague Bay in Worcester County.

**Harford**; county, organized in 1773, is bounded on the east and southeast by Susquehanna River and Chesapeake Bay, north by Pennsylvania, and on the west and southwest by Baltimore County. The surface is varied—the lower part being level, while above the Philadelphia turnpike it is undulating and quite hilly in some parts. It is well drained by the branches of the Little Gunpowder Falls in the lower part, while Deer Creek and its branches drain the northern part. The area is 388 square miles, of which almost three-fourths, or 174,255 acres, was under cultivation in 1900. The population for the same year was 28,269. The county seat is Belair. The average magnetic declination in the county in 1900 was 5° 40' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Harford Furnace**; post village in Harford County.

**Harkin**; village in Harford County.

**Harmans**; post village and station in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.

**Harmony Grove**; post village and station in Frederick County on the Northern Central Railroad.

**Harper**; creek, a small tributary of Patuxent River in St. Mary County.

**Harper**; station in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.

**Harris**; creek, a tributary of Choptank River in Talbot County.

**Harris**; wharf on Chesapeake Bay in Kent County.

**Harris Lot**; post village in Charles County.

**Harrisonville**; village in Baltimore County.

**Harrisville**; village in Cecil County.

**Harry**; creek, a small tributary of St. Martin River in Worcester County.

**Harry James**; creek, a small tributary of Potomac River in St. Mary County.

**Hart**; small, almost entirely marshy island in Chesapeake Bay in Baltimore County.

**Hartley**; post village in Baltimore County.

**Harvey**; village in Washington County.

**Harwood**; post village in Anne Arundel County on the Baltimore and Ohio Railroad.

**Hasty**; point in Worcester County, projecting into St. Martin River.

**Hathaway**; small island in Patapsco River in Baltimore County.

**Hauser**; post village in Garrett County.

**Havemyer Park**; village in Prince George County.

**Havre de Grace**; post village in Harford County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.

**Hawk**; cove, a small inlet of Chesapeake Bay in Baltimore County.

**Hawkins**; point in Anne Arundel County, projecting into Patapsco River. A lighthouse is erected thereon.

**Hawlings**; river, a tributary of Patuxent River in Montgomery County.

**Hawthorn**; cove, a small inlet of Seneca Creek in Baltimore County.

**Hayden**; post village in Queen Anne County.

**Haystack**; small branch of Long Green Creek in Baltimore County.

**Haystack**; pond, a small inlet at mouth of St. Martin River in Worcester County.

**Hazard**; cove, a small inlet near mouth of Big Annemessex River in Somerset County.

**Hazard**; point in Somerset County, projecting into mouth of Manokin River.

**Hazelnut**; small branch of Bens Branch in Frederick County.

**Hazen**; post village in Allegany County.

**Head of Creek**; village in Somerset County.

**Hearns**; village in Wicomico County.

**Hebbville**; village in Baltimore County.

**Hebron**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Helen**; post village in St. Mary County.

**Hellen**; creek, a small tributary of Patuxent River in Calvert County.

**Hellen**; gut, a small branch of Patuxent River in Calvert County.

**Hellen**; village in Calvert County.

**Hen and Chickens**; small-marshy island in St. Martin River in Worcester County.

**Henderson**; post village in Caroline County on the Philadelphia, Baltimore and Washington Railroad.

**Henryton**; post village in Carroll County on the Baltimore and Ohio Railroad.

**Henson**; creek, a small tributary of Potomac River in Prince George County.

**Hepbron**; station in Kent County on the Baltimore, Chesapeake and Atlantic Railway.

**Hereford**; village in Baltimore County.

**Hermanville**; post village in St. Mary County.

**Hernwood**; village in Baltimore County.

**Heron**; small island in Potomac River in St. Mary County.

**Herring**; bay, and arm of Chesapeake Bay in Anne Arundel County.

**Herring**; creek, a small tributary of Herring Bay in Anne Arundel County.

**Herring**; creek, a small tributary of Choptank River in Caroline County.

**Herring**; creek, a small tributary of Potomac River in St. Mary County.

**Herring**; run, a small tributary of Back River in Baltimore County.

**Herrington**; creek, a tributary of Youghiogheny River in Garrett County.

**Hess**; post village in Harford County.

**Hickory**; cove, a small inlet of Honga River in Dorchester County.

**Hickory**; village in Harford County.

**Hickorynut**; small island in Susquehanna River in Harford County.

**Hicks Mill**; village in Prince George County.

**Higgin**; point in St. Mary County, projecting into Potomac River.

**High**; point in Cecil County, projecting into Chesapeake Bay.

**High**; rock, a summit in Big Savage Mountain in Garrett County. Height, 3,000 feet.

**Highfield**; post village in Washington County.

**Highland**; post village in Howard County on the Maryland and Pennsylvania Railroad.

**High Point**; village in Harford County.

**Hill**; small marshy island in Assawoman Bay in Worcester County.

**Hill**; point in Anne Arundel County, projecting into South River.

**Hill**; run, a small branch of Georges Creek in Allegany County.

**Hill**; station in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Hills**; point in Dorchester County, projecting into Chesapeake Bay.

**Hillsboro**; town in Caroline County on the Philadelphia, Baltimore and Washington Railroad. Population, 196.

**Hills Point**; cove, a small inlet at mouth of Little Choptank River in Dorchester County.

**Hillspoint**; post village in Dorchester County.

**Hilltop**; post village in Charles County.

**Hillville**; village in St. Mary County.

**Hilton**; village in Howard County.

**Hobbs**; post village in Caroline County.

**Hoffman**; village in Allegany County on the Gunpowder Valley Railroad.

**Hog**; cove, a small inlet of Honga River in Dorchester County.

**Hog**; hills in Cecil County. Height, 300 feet.

**Hog**; marsh, a swamp in Dorchester County.

**Hog**; small island in Chesapeake Bay in Calvert County.

**Hog**; small marshy island south of Marsh Creek in Queen Anne County.

**Hoghole**; creek, a small stream tributary to Prospect Bay in Queen Anne County.

**Hog Island**; point in Worcester County, projecting into Chincoteague Bay.

**Holland**; creek, a small branch of Trappe Creek in Worcester County.

**Holland**; small, almost entirely marshy island in Holland Straits in Dorchester County.

**Holland**, point in Anne Arundel County, projecting into Chesapeake Bay.

**Holland**; point in Somerset County, projecting into Big Annemessex River.

- Holland**; strait, a passage between Bloodsworth Island and South Marsh on boundary between Dorchester and Somerset counties.
- Holland Island**; bar, a small island at entrance to Holland Straits in Dorchester County. A light-house is erected thereon.
- Holland Island**; post village in Dorchester County.
- Hollands**; small branch of Deer Creek in Harford County.
- Hollin Cliff**; point in Calvert County, projecting into Patuxent River.
- Hollins**; station in Baltimore County on the Northern Central Railway.
- Hollofield**; station in Howard County on the Baltimore and Ohio Railroad.
- Hollygrove**; station in Worcester County on the Baltimore, Chesapeake and Atlantic Railway.
- Hollywood**; post village in St. Mary County.
- Holton**; point in Queen Anne County, projecting into Chester River.
- Homeland**; station in Baltimore County on the Maryland and Pennsylvania Railroad.
- Honga**; river, a long winding bay, an arm of Chesapeake Bay.
- Hood**; point in Queen Anne County, projecting into Prospect Bay.
- Hoods Mills**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Hooper**; islands, a long narrow strip of almost entirely marshy land between Honga River and Chesapeake Bay in Dorchester County.
- Hooper**; neck, a strip of land between Davis and Slaughter creeks in Dorchester County.
- Hooper**; point in Dorchester County, projecting into Little Choptank River.
- Hoopersville**; post village in Dorchester County.
- Hoop Pole**; small mountain ridge in Garrett County.
- Hope**; post village in Queen Anne County.
- Hopewell**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Hopkins**; creek, a small branch of Middle River in Baltimore County.
- Horn**; point in Anne Arundel County, projecting into Annapolis Roads.
- Horn**; point in Dorchester County, projecting into Choptank River.
- Horner**; cove, a small inlet of West Fork of Langford Bay in Kent County.
- Horning**; run, a small branch of Bird River in Baltimore County.
- Horse**; creek, a branch of Ape Hole Creek in Somerset County.
- Horse**; small marshy island at mouth of Manklin Creek in Worcester County.
- Horse**; small marshy island in Assawoman Bay in Worcester County.
- Horsebridge**; creek, a small branch of Nassawango Creek in Wicomico County.
- Horse Landing**; creek, a small tributary of Patuxent River in St. Mary County.
- Horsepen**; branch, a small tributary of Prince George County.
- Horseshoe**; bend, a small inlet of St. Mary River in St. Mary County.
- Horseshoe**; point in Anne Arundel County, projecting into Cheapeake Bay.
- Horseshoe**; point in St. Mary County, projecting into St. Mary River.
- Houstans**; branch, a small tributary of Nanticoke River in Caroline County.
- Howard**; county, formed out of the northwest corner of Anne Arundel County, is bounded on the north by Carroll County, east by Baltimore and Anne Arundel counties, and southwest by Prince George and Montgomery counties. The surface is undulating, being completely intersected with spring branches flowing into larger streams. The area is 240 square miles, of which more than three-fourths, or 110,546 acres, was under cultivation in 1900. The population for the same year was 16,715. The county seat is Ellicott City. The average magnetic declination in the county in 1900 was 5° 15' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.
- Howard**; wharf on St. Clement Bay in St. Mary County.

**Howardsville**; post village in Baltimore County.

**Howell**; point in Kent County, projecting into Chesapeake Bay.

**Howell**; point in Talbot county, projecting into Choptank River.

**Hoyes**; run, a small branch of Youghiogheny River in Garrett County.

**Hoyes**; post village in Garrett County.

**Huddle**; point in Anne Arundel County, projecting into Magothy River.

**Hudson**; creek, a small tributary of Choptank River in Dorchester County.

**Hudson**; post village in Dorchester County.

**Hughesville**; post village in Charles County on the Washington, Potomac and Chesapeake Railroad.

**Hughletts**; neck, a strip of land lying between Cabin and Secretary creeks in Dorchester County.

**Humphrey**; creek, a small tributary of Patapsco River in Baltimore County.

**Huntersville**; post village in St. Mary County.

**Hunting**; creek, a tributary of Patuxent River in Calvert County.

**Hunting**; creek, a small tributary of Miles River in Talbot County.

**Hunting**; creek, a small tributary of Monocacy River in Frederick County.

**Huntingfield**; creek, a small stream tributary to Chesapeake Bay in Kent County.

**Huntingfield**; point in Kent County, projecting into Chesapeake Bay.

**Hunting Hill**; post village in Montgomery County.

**Huntingtown**; post village in Calvert County.

**Hurlock**; post village in Dorchester County.

**Hurry**; post village in St. Mary County.

**Hurst**; creek, a small tributary of Choptank River in Dorchester County.

**Hutton**; creek, a small tributary of Wicomico River.

**Hutton**; post village in Garrett County on the Baltimore and Ohio Railroad.

**Hyattstown**; town in Montgomery County. Population, 81.

**Hyattsville**; town in Prince George County on the Baltimore and Ohio and the Chesapeake Beach railroads. Population, 1,222.

**Hydes**; post village in Baltimore County.

**Hynesboro**; village in Prince George County.

**Hynson**; post village in Caroline County.

**Igleharts**; village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.

**Ijamsville**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Ilchester**; post village in Howard County on the Baltimore and Ohio Railroad.

**Indian**; creek, a tributary of Patuxent River on boundary between St. Mary and Charles counties.

**Indian**; creek, a small branch of Anacostia River in Prince George County.

**Indian**; creek, a small tributary of Choptank River in Dorchester County.

**Indian**; landing on Severn River in Anne Arundel County.

**Indian**; point in Talbot County, projecting into Harris Creek.

**Indian**; run, a small branch of Blackrock Run in Baltimore County.

**Indianhead**; post village in Charles County.

**Indian Rock**; small island in Susquehanna River in Cecil County.

**Indian Springs**; village in Washington County.

**Ingleside**; post village in Queen Anne County.

**Inverness**; post village in Somerset County.

**Irish**; creek, a small branch of Broad Creek in Talbot County.

**Ironhill**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Iron Ore**; mountain ridge in Allegany County, extending into Pennsylvania.

**Ironshire**; post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.



**Ironsides**; post village in Charles County.

**Island**; branch, a small tributary of Deer Creek in Harford County.

**Island**; creek, a small tributary of Choptank River in Talbot County.

**Island**; creek, a small tributary of Chester River in Queen Anne County.

**Island**; creek, a small tributary of Sassafras River in Kent County.

**Island**; creek, a small tributary of Potomac River on St. George Island in St. Mary County.

**Island**; creek, a small stream tributary of Fishing Bay in Dorchester County.

**Island**; creek, a small tributary of Patuxent River in Calvert County.

**Island**; point in Worcester County, projecting into Newport Bay.

**Island Creek**; post village in Calvert County.

**Isle of Wight**; small bay at the mouth of St. Martin River in Worcester County, separated from the ocean by a sand bar.

**Isle of Wight**; island formed of a bit of elevated dry land in the sea marshes of Worcester County.

**Israel**; creek, a small branch of Monocacy River in Frederick County.

**Issue**; post village in Charles County.

**Ivery**; post village in Howard County.

**Jabez**; branch, a small tributary of Severn River in Anne Arundel County.

**Jack**; bay, a small arm of Patuxent River in Calvert County.

**Jack**; creek, a small tributary of Nanticoke River in Dorchester County.

**Jackson**; creek, a small tributary of Deer Creek in Harford County.

**Jackson**; run, small tributary of Georges Creek in Allegany County.

**Jackson**; station in Cecil County on the Baltimore and Ohio Railroad.

**Jackson Creek**; landing on Chester River in Queen Anne County.

**Jacksonville**; post village in Baltimore County.

**Jacobs**; nose, a point in Cecil County, projecting into mouth of Elkton River.

**Jacobs Store**; village in Anne Arundel County.

**Jacobsville**; village in Anne Arundel County.

**James**; island at mouth of Choptank River in Dorchester County.

**James**; point on James Island in Dorchester County, projecting into Cheasapeake Bay.

**James**; run, a small tributary of Bush River in Harford County.

**James**; post village in Dorchester County.

**Janes**; large marshy island in Tangier Sound in Somerset County.

**Jarboesville**; post village in St. Mary County.

**Jarrett**; creek, a small tributary of Chester River in Kent County.

**Jarrettsville**; post village in Harford County.

**Jason**; village in Somerset County.

**Jefferson**; village in Frederick County.

**Jenkins**; creek, a small tributary of Choptank River in Dorchester County.

**Jenkins**; creek, a small tributary of Little Annemessex River in Somerset County.

**Jenkins**; hill, a spur of Meadow Mountain in Garrett County separating Poplar Lick and Bear Pen runs.

**Jenkins**; point in Worcester County, projecting into St. Martin River.

**Jenkins**; post village in Baltimore County.

**Jennings**; post village in Garrett County.

**Jennings**; run, a tributary of Wills Creek in Allegany County.

**Jersey**; small marshy island near mouth of Little Annemessex River in Somerset County.

**Jersey**; village in Wicomico County.

**Jerusalem**; post village in Harford County.

**Jessup**; post village in Howard County on the Baltimore and Ohio Railroad.

**Jesterville**; post village in Wicomico County.

**Jewell**; post village in Anne Arundel County.

**Joes Ridge**; creek, a small stream on Smith Island in Somerset County flowing into Chesapeake Bay.

**Johns Hammock**; marsh in Assawoman Bay in Worcester County.

**Johnson**; bay, an arm of Chincoteague Bay in Worcester County.

**Johnson**; creek, a small stream flowing into Ape Hole Creek in Somerset County.

**Johnson**; small pond in Wicomico County drained by Beaverdam Creek, a tributary of Wicomico River.

**Jones**; creek, a small tributary of Annemessex River in Somerset County.

**Jones**; creek, a small tributary of Manokin River in Somerset County.

**Jones**; point in Calvert County, projecting into Patuxent River.

**Jones**; small pond in Wicomico County drained by Beaverdam Creek, a tributary of Wicomico River.

**Jones**; post village in Worcester County.

**Jones**; wharf on Patuxent River in St. Mary County.

**Jones**; wharf on St. Mary River in St. Mary County.

**Jones Falls**; creek, rises in Lake Roland and flows through Baltimore City into Northwest Harbor of Patapsco River.

**Joppa**; post village in Harford County on the Baltimore and Ohio Railroad.

**Journey Cake**; neck, a strip of land between Island Creek and Chester River in Queen Anne County.

**Judith**; point in Charles County, projecting into Patuxent River.

**Kaese Mill**; village in Garret County.

**Kalmia**; village in Harford County.

**Kane**; point in Dorchester County, projecting into Honga River.

**Kaywood**; point in St. Mary County, projecting into Potomac River.

**Kearney**; post village in Garrett County.

**Kedge**; straits, a passage between Smith Island and South Marsh in Somerset County.

**Keedysville**; town in Washington County on the Baltimore and Ohio Railroad. Population, 426.

**Keenan**; ridge, a spur of Town Hill Mountain in Allegany County.

**Keene**; broads, a small pond at head of St. John Creek in Dorchester County.

**Keene**; ditch, a small branch of Honga River in Dorchester County.

**Keener**; village in Baltimore County.

**Keeptryst**; post village in Washington County.

**Kelso**; gap in Backbone Mountain in Garrett County.

**Kelly**; point in Worcester County, projecting into Chincoteague Bay.

**Kelly**; village in Wicomico County.

**Kemptown**; village in Frederick County.

**Kendall**; post village in Garrett County.

**Kennedyville**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Kensington**; post village in Montgomery County on the Baltimore and Ohio Railroad. Population, 477.

**Kent**; county, organized in 1650, is one of the Eastern Shore counties, and is bounded on the east by the State of Delaware. It is a peninsula lying between Sassafras River, north, Chesapeake Bay, west, and Chester River, south and southeast. The surface is level, though not low, and rolls sufficiently to be well drained by the many creeks flowing into its bordering rivers and the bay. The area is 281 square miles, of which about three-fourths, or 138,947 acres was under cultivation in 1900. The county seat is Chestertown, with a population of 3,008 in 1900. The average magnetic declination in the county in 1900 was 5° 40' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.



**Kent**; island in Chesapeake Bay in Queen Anne County.

**Kent**; landing on Kent Island in Chester River in Queen Anne County.

**Kent**; point in Queen Anne County, projecting into Eastern Bay.

**Kent Island**; narrows, a passage separating Kent Island from the mainland in Queen Anne County.

**Kent Island**; village in Queen Anne County on Kent Island.

**Kenwood**; village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Kerrick**; swamp, a small stream flowing into Zekiah Swamp in Charles County.

**Keyser**; point in Worcester County, projecting into Isle of Wight Bay.

**Keyser**; post village in Garrett County.

**Kings**; creek, a small tributary of Bush River in Harford County.

**Kings**; creek, a small branch of East Fork of Langford Bay in Kent County.

**Kings**; creek, a tributary of Manokin River in Somerset County.

**Kings Creek**; station in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Kingsley**; post village in Montgomery County.

**Kingston**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Kings Valley**; post village in Montgomery County.

**Kingsville**; post village in Baltimore County.

**Kirby**; landing on Chester River in Kent County.

**Kirby**; wharf on Choptank River in Talbot County.

**Kirkham**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.

**Kitty**; point in St. Mary County, projecting into Potomac River.

**Klej Grange**; post village in Worcester County.

**Knapp**; narrows, a narrow passage between Chesapeake Bay and Harris Creek in Talbot County.

**Knight Island**; village in Cecil County.

**Knoebel**; post village in Baltimore County.

**Knot**; point in Worcester County, projecting into Newport Bay.

**Knoxville**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Koontz**; run, a small tributary of Georges Creek in Garrett County.

**Koontz**; village in Allegany County on the George's Creek and Cumberland Railroad.

**Kreigbaum**; station in Allegany County on the Cumberland and Pennsylvania Railroad.

**Krug**; station in Garrett County on the Baltimore and Ohio Railroad.

**Kump**; post village in Carroll County.

**Ladiesburg**; post village in Frederick County.

**Lakeland**; post village in Prince George County on the Baltimore and Ohio Railroad.

**Lake Ogleton**; small inlet of Annapolis Roads in Anne Arundel County.

**Lake Roland**; small lake in Baltimore County drained by Jones Falls.

**Lakeshore**; post village in Anne Arundel County.

**Lakesville**; post village in Dorchester County.

**Lambson**; village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Lamotte**; post village in Carroll County.

**Lancaster**; wharf on Wicomico River in Charles County.

**Lander**; post village in Frederick County.

**Landonville**; post village in Somerset County.

**Landover**; post village in Prince George County on Philadelphia, Baltimore and Washington Railroad.

- Lane**; creek, a small tributary of West River in Anne Arundel County.
- Lanes**; run, a small branch of Licking Creek in Washington County.
- Langford**; bay, a creek tributary to Chester River in Kent County.
- Langford**; post village in Kent County.
- Lanham**; post village in Prince George County.
- Lansdown**; post village in Baltimore County on the Baltimore and Ohio Railroad.
- Lantz**; post village in Frederick County.
- Lapidum**; post village in Harford County.
- Laplata**; county seat of Charles County on the Philadelphia, Baltimore and Washington Railroad.
- Largo**; post village in Prince George County.
- Lauraville**; village in Baltimore County.
- Laurel**; run, a small tributary of Buffalo Run in Garrett County.
- Laurel**; run, a small tributary of Little Elk Creek in Cecil County.
- Laurel**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Laurel**; run, a small tributary of Youghiogheny River in Garrett County.
- Laurel**; run, rises in Garrett County and flows through Allegany County into Georges Creek.
- Laurel**; town in Prince George County on the Baltimore and Ohio Railroad. Population, 2,079.
- Laurel Brook**; station in Harford County on the Maryland and Pennsylvania Railroad.
- Laurel Grove**; post village in St. Mary County.
- Lavender Hill**; village in Baltimore County.
- Laws**; thoroughfare, a passageway separating Deal Island from the mainland in Somerset County.
- Lawsonia**; post village in Somerset County.
- Lawyers**; cove, a small inlet of Langford Bay in Kent County.
- Layhill**; post village in Montgomery County.
- Laytonsville**; town in Montgomery County. Population, 148.
- Lazaretto**; point in Baltimore County, projecting into Patapsco River.
- Leadenham**; creek, a small tributary of Broad Creek in Talbot County.
- Leading**; point in Anne Arundel County, projecting into Patapsco River. A lighthouse is erected thereon.
- Le Compt**; bay, a small inlet of Choptank River in Dorchester County.
- Lee**; creek, a small tributary of Choptank River in Dorchester County.
- Leeds**; creek, a small tributary of Miles River in Talbot County.
- Leeds**; post village in Cecil County.
- Leeland**; post village in Prince George County on the Philadelphia, Baltimore and Ohio Railroad.
- Lego**; point in Harford County, projecting into Bush River.
- Le Gore**; post village in Frederick County on the Northern Central Railway.
- Leitch**; wharf on Patuxent River in Calvert County.
- Leitchs**; post village in Anne Arundel County.
- Lelland**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Leon**; post village in Anne Arundel County.
- Leonard**; small pond in Wicomico County drained by Wicomico River.
- Leonardtwn**; county seat of St. Mary County. Population, 463.
- Leslie**; post village in Cecil County on the Baltimore and Ohio Railroad.
- Level**; post village in Harford County.
- Lewis**; knob, a mountain in Garrett County. Height, 2,000 feet.
- Lewis**; landing on Nanticoke River in Dorchester County.
- Lewisdale**; post village in Montgomery County.
- Lewistown**; village in Frederick County.

- Liberty Grove**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Libertytown**; small branch of Timmonstown Branch in Worcester County.
- Libertytown**; village in Frederick County.
- Licking**; creek, a tributary of Potomac River in Washington County.
- Licking**; run, a small branch of Deep Run on boundary between Howard and Anne Arundel counties.
- Licksville**; village in Frederick County.
- Lighting Knot**; cove in Smith Island in Somerset County.
- Limekiln**; post village in Frederick County.
- Linchester**; post village in Caroline County.
- Linden**; village in Montgomery County on the Baltimore and Ohio Railroad.
- Linden**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Lineboro**; post village in Carroll County.
- Linganore**; village in Frederick County.
- Linkwood**; post village in Dorchester County on the Philadelphia, Baltimore and Washington Railroad.
- Linthicum**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Linwood**; post village in Carroll County on the Western Maryland Railroad.
- Lisbon**; post village in Howard County.
- Little**; creek, a small tributary to Monie Bay in Somerset County.
- Little**; creek, a small tributary of Choptank River in Talbot County.
- Little**; small marshy island in Tangier Sound in Somerset County.
- Little**; mountain in Garrett County.
- Little**; pond in Worcester County near head of Swan Gut Creek.
- Little Allegany**; mountain, on border between Pennsylvania and Maryland in Allegany County.
- Little Annemessex**; river, a tributary to Tangier Sound in Somerset County.
- Little Bennett**; creek, a small tributary of Big Bennett Creek in Frederick County.
- Little Blackwater**; river, a tributary of Blackwater River in Dorchester County.
- Little Bohemia**; creek, a tributary of Bohemia River in Cecil County.
- Little Buffalo**; run, a small branch of Buffalo Run in Garrett County.
- Little Burnt**; branch, a small tributary of Wicomico River in Wicomico County.
- Little Catoctin**; creek, a small tributary of Potomac River in Frederick County.
- Little Choptank**; river, tributary to Chesapeake Bay in Dorchester County.
- Little Cove**; point in Calvert County, projecting into Chesapeake Bay.
- Little Deer**; creek, a small tributary of Deer Creek in Harford County.
- Little Egging**; beach on sand bar separating Sinepuxent Bay from the Atlantic Ocean in Worcester County.
- Little Elk**; creek, heads in Pennsylvania and flows through Cecil County into Elk River.
- Little Falls**; creek, a tributary of Gunpowder Falls in Baltimore County.
- Little Gunpowder Falls**; river, a tributary of Gunpowder River on boundary between Baltimore and Harford counties.
- Little Hunting**; creek, a branch of Hunting Creek in Frederick County.
- Little Laurel**; run, a small branch of South Branch of Castleman River.
- Little Magothy**; river, a tributary of Magothy River in Anne Arundel County.
- Little Monie**; creek, a tributary to Monie Bay in Somerset County.
- Little Monocacy**; river, a tributary of Monocacy River in Montgomery County.
- Little Northeast**; creek, a branch of Northeast River in Cecil County.
- Little Orleans**; post village in Allegany County.
- Little Patuxent**; river, tributary of Big Patuxent River in Howard and Anne Arundel counties.

- Little Pipe**; creek, a tributary of Big Pipe Creek on boundary between Frederick and Carroll counties.
- Little Point**; creek, a branch of Point Branch in Prince George County.
- Little Round**; bay, a small inlet of Big Round Bay in Anne Arundel County.
- Little Run**; creek, a small branch of Little Pipe Creek in Carroll County.
- Little Savage**; mountain, a ridge lying parallel to Big Savage Mountain in Garrett County, extending into Pennsylvania.
- Little Savage**; river, a tributary of Savage River in Garrett County.
- Little Seneca**; creek, a tributary of Great Seneca Creek in Montgomery County.
- Little Shade**; run, a tributary of Big Shade Run in Garrett County.
- Little Tonoloway**; creek, a tributary of Tonoloway Creek in Washington County.
- Little Troy**; small island at mouth of Sawney Cove in Somerset County.
- Little Tuscarora**; creek, a small tributary of Monocacy River in Frederick County.
- Little Youghiogheny**; river, a tributary of Youghiogheny River in Garrett County.
- Lloyd**; creek, a small tributary of Sassafras River in Kent County.
- Lloyd**; creek, a small tributary of Front Wye River in Talbot County.
- Lloyds**; point in Baltimore County, projecting into mouth of Humphrey Creek.
- Lloyds**; post village in Dorchester County.
- Loarville**; village in Allegany County.
- Loch Raven**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Loch Lynn Heights**; town in Garrett County. Population, 215.
- Lock 53**; village in Washington County.
- Lockearn**; village in Baltimore County.
- Locust**; point in Cecil County, projecting into Chesapeake Bay.
- Locust**; point in Cecil County, projecting into Elk River.
- Locust**; point in Harford County, projecting into Chesapeake Bay.
- Locust**; point in Somerset County, projecting into Manokin River.
- Locustgrove**; post village in Kent County.
- Loderick**; creek, a small tributary of Bush River in Harford County.
- Log**; point in Baltimore County, projecting into Middle River.
- Lombard**; post village in Cecil County.
- Lonaconing**; town in Allegany County on the Cumberland and Pennsylvania and George's Creek and Cumberland railroads. Population, 2,181.
- Lone Cedar**; point in Worcester County, projecting into Assawoman Bay.
- Lonehouse**; creek, a small tributary of South River in Anne Arundel County.
- Long**; cove, a small inlet of Langford Bay in Kent County.
- Long**; small island in Susquehanna River in Cecil County.
- Long**; small, almost entirely marshy island in Chesapeake Bay in Dorchester County.
- Long**; hollow in Tonoloway Ridge in Washington County.
- Long**; point in Anne Arundel County, projecting into Round Bay.
- Long**; point in Dorchester County, projecting into Nanticoke River.
- Long**; point in Dorchester County, projecting into Honga River.
- Long**; point in Queen Anne County, projecting into Chester River.
- Long**; point in St. Mary County, projecting into St. Clements Bay.
- Long**; point in St. Mary County, projecting into St. Mary River.
- Long**; point in St. Mary County, projecting into Patuxent River.
- Long**; point in Somerset County, projecting into Big Annemessex River.
- Long**; point in Somerset County, projecting into mouth of Wicomico River.
- Long**; point in Somerset County, projecting into Little Annemessex River.
- Long**; point in Talbot County, projecting into Miles River.
- Long**; post village in Allegany County.
- Long**; mountain ridge in Washington County lying between Tonoloway Ridge and Sideling Hill.

**Long Corner**; a village in Howard County.

**Long Draught**; creek, a tributary of Great Seneca Creek in Montgomery County.

**Long Green**; creek, a tributary of Gunpowder Falls in Baltimore County.

**Long Green**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Longhaul**; creek, a small tributary of Miles River in Talbot County.

**Long Marsh**; ditch, a small tributary of Tuckahoe Creek on boundary of Queen Anne and Caroline counties.

**Longrell**; creek, a small tributary of Nanticoke River in Dorchester County.

**Longwoods**; post village in Talbot County.

**Look-in**; point in St. Mary County, projecting into Chesapeake Bay.

**Lookout**; point in St. Mary County, projecting into mouth of Potomac River.

**Lord**; post village in Allegany County.

**Lorddolph**; village in Allegany County.

**Loreley**; post village in Baltimore County on the Baltimore and Ohio Railroad.

**Loretto**; village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Lost Sand**; run, a small tributary of North Branch of Potomac River in Garrett County.

**Lothian**; post village in Anne Arundel County.

**Lottsford**; small branch of Western Branch in Prince George County.

**Love**; point in Queen Anne County, projecting into Chester River.

**Love**; run, a small tributary of Octararo Creek in Cecil County.

**Lovell**; point in Baltimore County, projecting into Patapasco River.

**Lovely**; cove, a small inlet of East Fork of Langford Bay in Kent County.

**Lovers**; point in St. Mary County, projecting into Breton Bay.

**Loveville**; post village in St. Mary County.

**Lower Cedar**; point in Charles County, projecting into Potomac River.

**Lower Island**; point in Baltimore County, projecting into Chesapeake Bay.

**Lower Hunting**; creek, a small tributary of Upper Hunting Creek in Dorchester County.

**Lower Marlboro**; post village in Calvert County.

**Lower Spaniards**; point in Queen Anne County, projecting into Chester River.

**Lower Thorn**; point in Charles County, projecting into Potomac River.

**Lower Thoroughfare**; passageway separating Little Island from Deal Island in Somerset County.

**Lowndes**; village in Allegany County.

**Lows**; landing on Eastern Bay in Talbot County.

**Lows**; point in Talbot County, projecting into Eastern Bay.

**Loys**; post village in Frederick County on the Western Maryland Railroad.

**Luce**; creek, a small tributary of Severn River in Anne Arundel County.

**Luke**; post village in Allegany County.

**Lumber**; small marshy island in Chincoteague Bay in Worcester County.

**Lusbys**; post village in Calvert County.

**Lutherville**; post village in Baltimore County on the Northern Central Railway.

**Lydia**; post village in Washington County.

**Lynch**; point in Baltimore County, projecting into Back River.

**Lynch**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Lyons**; creek, a small tributary of Patuxent River on boundary between Calvert and Anne Arundel counties.

**Lyons Creek**; wharf on Patuxent River in Calvert County.

**McConchie**; post village in Charles County.

**McCoole**; post village in Allegany County.

**McDameltown**; village in Talbot County.

**McDaniel**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.

**McDonogh**; post village in Baltimore County on the Western Maryland Railroad.

**McHenry**; post village in Garrett County.

**McIntosh**; run, a small tributary to Breton Bay in St. Mary County.

**McIntyre**; village in Harford County.

**McKendree**; post village in Anne Arundel County.

**McKendree**; village in Prince George County.

**Mackall**; post village in Calvert County.

**Macton**; post village in Harford County.

**Macum**; small tributary of Chester River in Queen Anne County.

**Maddox**; island, a bit of elevated dry land in sea marshes of Somerset County.

**Maddox**; post village in St. Mary County.

**Madison**; bay, a small inlet of Little Choptank River in Dorchester County.

**Madison**; post village in Dorchester County.

**Madonna**; village in Harford County.

**Magnolia**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.

**Magothy**; river, an estuary entering Chesapeake Bay in Anne Arundel County.

**Magruder**; small branch of Great Seneca Creek in Montgomery County.

**Magruder**; (Tuxedo P. O.) village in Prince George County on Philadelphia, Baltimore and Washington Railroad.

**Main**; creek, a small tributary of Patapsco River in Anne Arundel County.

**Malcolm**; post village in Charles County.

**Mallows**; creek, a small tributary of Potomac River in Charles County.

**Manahowic**; creek, a small tributary of Wicomico River in St. Mary County.

**Manchester**; village in Carroll County. Population, 609.

**Manklin**; creek, a small tributary to Isle of Wight Bay in Worcester County.

**Manokin**; post village in Somerset County.

**Manokin**; river, a tributary to Tangier Sound in Somerset County.

**Manor**; post village in Baltimore County.

**Mantua**; village in Baltimore County.

**Maple**; run, a small branch of Town Creek in Allegany County.

**Maplegrove**; post village in Carroll County on the Western Maryland Railroad.

**Mapleville**; post village in Washington County.

**Marble Hill**; village in Baltimore County.

**Mardela Springs**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Margots**; small island in St. Martin River in Worcester County.

**Marion**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.

**Marlboro**; station in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Marley**; creek, a tributary of Curtis Creek in Anne Arundel County.

**Marley**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Marriott Hill**; village in Anne Arundel County.

**Marriottsville**; post village in Howard County on the Baltimore and Ohio Railroad.

**Marsh**; creek, a small branch of Back Creek in Baltimore County.

**Marsh**; creek, a small tributary of Choptank River in Caroline County.

**Marsh**; hill in Garrett County. Height, 3,073 feet.

**Marsh**; point in Kent County, projecting into Island Creek.

**Marsh**; point in St. Mary County, projecting into Patuxent River.



- Marsh**; run, a branch of Deep Creek in Garrett County.
- Marshall**; creek, a small tributary to Newport Bay in Worcester County.
- Marshall Hall**; post village in Charles County.
- Marshy**; creek, a small tributary to Prospect Bay in Queen Anne County.
- Marter**; cove, a small inlet of Wye River in Queen Anne County.
- Martin**; bay, an arm of Chincoteague Bay in Worcester County.
- Martin**; mountain ridge in Allegany County extending into Pennsylvania.
- Martin**; point in Worcester County, projecting into Chincoteague Bay.
- Martin**; point in St. Mary County, projecting into St. Mary River.
- Martinsburg**; post village in Montgomery County.
- Marumsco**; creek, a tributary of Pocomoke River in Somerset County.
- Marumsco**; post village in Somerset County.
- Marydell**; post village in Caroline County on the Philadelphia, Baltimore and Washington Railroad.
- Maryland**; point in Charles County, projecting into Potomac River.
- Maryland Line**; post village in Baltimore County.
- Masons**; island in Potomac River in Montgomery County.
- Mason Springs**; post village in Charles County.
- Massey**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Mataponi**; creek, a small tributary of Patuxent River in Prince George County.
- Mattapex**; post village in Queen Anne County.
- Mattaponi**; landing on Pocomoke River in Worcester County.
- Mattawoman**; creek, a tributary of Potomac River in Prince George and Charles counties.
- Mattawoman**; post village in Charles County.
- Matthew**; run, a small tributary of Georges Creek in Allegany County.
- Matthews**; post village in Talbot County.
- Maugansville**; post village in Washington County on the Cumberland Valley Railroad.
- Mayfield**; post village in Howard County.
- Maynard**; post village in Anne Arundel County.
- Maynardier**; ridge, a spur of Meadow Mountain separating Little and Big Laurel runs in Garrett County.
- Mayo**; point in Anne Arundel County, projecting into South River.
- Mayo**; post village in Anne Arundel County.
- Meadow**; small island in Susquehanna River in Harford County.
- Meadow**; mountain ridge in Garrett County. Height, 3,031 feet.
- Meadow**; run, a small tributary of Castleman River heading in Garrett County and flowing into Pennsylvania.
- Meadow Mountain**; run, a tributary of Deep Creek in Garrett County.
- Meadows**; post village in Prince George County.
- Mechanicsville**; post village in St. Mary County on the Washington, Potomac and Chesapeake Railroad.
- Mechanic Valley**; village in Cecil County.
- Medford**; post village in Carroll County on the Western Maryland Railroad.
- Meekin**; neck, a strip of land lying between Honga River and Chesapeake Bay in Dorchester County.
- Melitota**; post village in Kent County.
- Melson**; village in Wicomico County.
- Melvale**; village in Baltimore County on the Northern Central Railway.
- Merrell**; post village in Garrett County.
- Michaelsville**; post village in Harford County.
- Middle**; branch, a tributary of Patapsco River within limits of Baltimore City.

- Middle**; small branch of Shingle Landing Prong in Worcester County.
- Middle**; creek, a small stream on Deal Island in Somerset County tributary to Tangier Sound.
- Middle**; neck, a strip of land lying between Great and Little Bohemia creeks in Cecil County.
- Middle**; ridge, a spur of Meadow Mountain in Garrett County separating Monroe and Big runs.
- Middle**; river, a tributary to Chesapeake Bay in Baltimore County.
- Middlebrook**; post village in Montgomery County.
- Middleburg**; post village in Carroll County on the Western Maryland Railroad.
- Middle Fork**; creek, a tributary of Savage River in Garrett County.
- Middle Patuxent**; river in Howard County flowing into Little Patuxent River.
- Middle Quarter**; cove, a tributary of Chester River in Queen Anne County.
- Middleriver**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.
- Middletown**; town in Frederick County. Population, 665.
- Midland**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Midlothian**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Milburn**; landing on Pocomoke River in Worcester County.
- Miles**; branch, a tributary of Nanticoke River in Dorchester County.
- Miles**; river, a tributary to Eastern Bay in Talbot County.
- Milestown**; post village in St. Mary County.
- Miley**; creek, a small tributary to St. Clement Bay in St. Mary County.
- Mill**; brook, a tributary of Deer Creek in Harford County.
- Mill**; creek, a small branch of Furnace Creek in Cecil County.
- Mill**; creek, a small branch of Island Creek in Kent County.
- Mill**; creek, a small tributary of North Branch of Potomac River in Allegany County.
- Mill**; creek, a small branch of Rock Creek in Montgomery County.
- Mill**; creek, a small tributary of Whitehall River in Anne Arundel County.
- Mill**; creek, a small tributary of Patuxent River in Calvert County.
- Mill**; creek, a small tributary of Patuxent River in St. Mary County.
- Mill**; creek, a small tributary of Wicomico River in St. Mary County.
- Mill**; point in Dorchester County, projecting into Trappe Bay.
- Mill**; point in St. Mary County, projecting into Wicomico River.
- Mill**; run, a small tributary of Youghiogheny River.
- Mill**; run, a tributary of Georges Creek in Garrett and Allegany counties.
- Miller**; island in Chesapeake Bay in Baltimore County.
- Miller**; run, a small branch of Poplar Lick Run in Garrett County.
- Miller**; run, a small tributary of Youghiogheny River in Garrett County.
- Miller**; village in Allegany County.
- Millers**; post village in Carroll County on the Western Maryland Railroad.
- Millersville**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Millersville**; village in Baltimore County on the Baltimore and Ohio Railroad.
- Mill Green**; village in Harford County.
- Millington**; town in Kent County on the Philadelphia, Baltimore and Washington Railroad. Population, 406.
- Mills**; branch, a small tributary of Chester River in Kent County.
- Mills**; small island in Susquehanna River in Cecil County.
- Mills**; small, almost entirely marshy island in Chincoteague Bay in Worcester County.
- Millstone**; village in St. Mary County.



**Millstone**; village in Washington County.

**Milltown**; landing on Patuxent River in Prince George County.

**Millville**; village in Worcester County.

**Milton**; village in Dorchester County.

**Milton**; point in Kent County, projecting into Chester River.

**Mine**; creek, a small tributary of Manokin River in Somerset County.

**Mine Bank**; run, a small tributary of Gunpowder Falls in Baltimore County.

**Mineral Spring**; village in Garrett County.

**Minksville**; village in Wicomico County.

**Mitchell**; bluff, a point in Kent County, projecting into Chesapeake Bay.

**Mitchellville**; post village in Prince George County.

**Moccasin**; pond, a small inlet of Isle of Wight Bay in Worcester County.

**Mockingbird**; pond in Wicomico County drained by Barren Creek.

**Mondel**; post village in Washington County on the Norfolk and Western Railway.

**Monie**; bay, an arm of Chesapeake Bay in Somerset County.

**Monie**; neck, a strip of land lying between Big and Little Monie creeks and Monie Bay.

**Monie**; post village in Somerset County.

**Monkey Lodge**; hill in Garrett County. Height, 2,600 feet.

**Monkton**; post village in Baltimore County on the Northern Central Railway.

**Monocacy**; post village in Montgomery County.

**Monocacy**; river, a tributary of Potomac River in Frederick County.

**Monroe**; run, a small tributary of Big Run in Garrett County.

**Monrovia**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Montebello**; small lake within the chartered limits of Baltimore City.

**Montgomery**; county, bounded on the southwest by Virginia, on the northwest by Frederick County, on the northeast by Patuxent River, and southeast by Prince George County and the District of Columbia. The surface is mostly hilly, and gives rise to many branches, most of which have considerable fall in a very short distance. The area is 400 square miles, of which nearly two-thirds, or 212,840 acres, was under cultivation in 1900. The county seat is Rockville, with a population of 1,110 in 1900. The average magnetic declination in the county in 1900 was 4° 45' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Montrose**; post village in Montgomery County.

**Moon**; mountain ridge in Garrett County.

**Moons**; bay, a small inlet of Big Annemessex River in Somerset County.

**Moore**; knob, a hill in Washington County. Height, 900 feet.

**Moore**; run, a small tributary of Georges Creek in Allegany County.

**Moors**; run, a small tributary of Back River in Baltimore County.

**Morantown**; village in Allegany County.

**Morgan**; creek, a small tributary of Chester River in Kent County.

**Morgan**; post village in Carroll County on the Baltimore and Ohio Railroad.

**Morgan**; run, a small tributary of North Branch of Patapsco River in Carroll County.

**Morganza**; post village in St. Mary County.

**Morgnec**; post village in Kent County.

**Morris**; pond in Wicomico County drained by Morris Prong, which flows into Tonytank Creek.

**Morris**; prong, a small tributary of Tonytank Creek in Wicomico County.

**Moscow Mill**; post village in Allegany County.

**Mosquito**; creek, a small tributary of Chesapeake Bay in Harford County.

**Motters**; post village in Frederick County on the Emmitsburg Railroad.

**Mountain**; small branch of Winters Run in Harford County.

- Mountain**; point in Anne Arundel County, projecting into mouth of Magothy River.
- Mountain**; post village in Harford County.
- Mountain Hill**; village in Harford County.
- Mountain Lake Park**; town in Garrett County on the Baltimore and Ohio Railroad. Population, 215.
- Mountain View**; village in Howard County.
- Mount Airy**; village in Carroll County on the Baltimore and Ohio Railroad. Population, 332.
- Mount Carmel**; post village in Baltimore County.
- Mount Ephraim**; village in Montgomery County.
- Mount Harmony**; post village in Calvert County on the Chesapeake Beach Railway.
- Mount Holly**; village in Dorchester County.
- Mount Hope**; village in Baltimore County on the Western Maryland Railroad.
- Mount Misery**; village in Anne Arundel County.
- Mount Pleasant**; village in Frederick County.
- Mount Savage**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Mount Savage Junction**; station in Allegany County on the Baltimore and Ohio and the Cumberland and Pennsylvania railroads.
- Mount Vernon**; post village in Somerset County.
- Mountview**; post village in Howard County.
- Mount Vista**; post village in Baltimore County.
- Mount Washington**; village in Baltimore County.
- Mount Wilson**; post village in Baltimore County on the Western Maryland Railroad.
- Mount Zion**; village in Cecil County.
- Mud**; creek, a small tributary of Patuxent River in St. Mary County.
- Mud**; creek, a small tributary of Tred Avon River in Talbot County.
- Mud**; creek, a small tributary of Turville Creek in Worcester County.
- Muddy**; branch, a tributary of Potomac River in Montgomery County.
- Muddy**; creek, a small tributary of Big Annemessex River in Somerset County.
- Muddy**; creek, a small tributary of Chester River in Queen Anne County.
- Muddy**; creek, a small tributary of Choptank River in Talbot County.
- Muddy**; creek, a small tributary of Rhode River in Anne Arundel County.
- Muddy**; creek, a small tributary of Youghiogheny River in Garrett County.
- Muddy**; run, a small tributary of Herrington Creek in Garrett County.
- Mudlick**; hollow in Town Hill in Allegany County.
- Muirkirk**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Mulberry**; point in Dorchester County, projecting into Nanticoke River.
- Mulberry**; point in Harford County, projecting into Chesapeake Bay.
- Mullinix**; post village in Montgomery County.
- Murley**; branch, a small tributary of Town Creek in Allegany County.
- Murumsco**; creek, a small tributary of Pocomoke River in Somerset County.
- Muskrattown**; village in Worcester County.
- Mutton**; small islands in Susquehanna River in Harford County.
- Mutual**; post village in Calvert County.
- Myersville**; post village in Frederick County.
- My Lady**; small branch of Carroll Branch in Baltimore County.
- Myrtle**; point in Somerset County, projecting into Big Annemessex River.
- Nabs**; creek, a small branch of Stony Creek in Anne Arundel County.
- Nailors**; small pond at junction of Little Burnt Branch and Wicomico River in Wicomico County.
- Nan**; cove, a small inlet of Patuxent River in Calvert County.
- Nanjemoy**; creek, a small tributary of Potomac River in Charles County.

**Nanjemoy**; post village in Charles County.

**Nanticoke**; point in Wicomico County, projecting into Wicomico River.

**Nanticoke**; post village in Wicomico County.

**Nanticoke**; river, heads in southern Delaware in several branches and flows southwest through Maryland into Tangier Sound, an arm of Chesapeake Bay.

**Narrow**; point in Queen Anne County, projecting into Prospect Bay.

**Nassawango**; large creek flowing through Wicomico and Worcester counties into Pocomoke River.

**Nat**; creek, a small branch of Mill Creek in St. Mary County.

**Neal**; sound, a narrow passage between the mainland and a small island in Charles County.

**Neavitt**; post village in Talbot County.

**Nebo**; mountain, a summit west of Savage River in Garrett County.

**Necker**; post village in Baltimore County.

**Neelsville**; village in Montgomery County.

**Neff**; run, a small tributary of Georges Creek in Allegany County.

**Negro**; mountain in Garrett County. Height, 2,800 feet.

**Nelson**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.

**Nelson**; point in Talbot County, projecting into Choptank River.

**Neri**; post village in Allegany County.

**Newark**; post village in Worcester County.

**Newburg**; post village in Charles County.

**Newcomb**; creek, a small tributary of Miles River in Talbot County.

**Newcomb**; post village in Talbot County.

**New Germany**; post village in Garrett County.

**New Glatz**; post village in Prince George County.

**Newhope**; pond, a small inlet of Pocomoke River in Wicomico County.

**Newhope**; post village in Wicomico County.

**New London**; village in Frederick County.

**New Market**; town in Frederick County. Population, 360.

**New Midway**; post village in Frederick County on the Northern Central Railway.

**Newport**; bay, a small arm of Chincoteague Bay in Worcester County.

**Newport**; creek, a small branch of Trappe Creek in Worcester County.

**Newport**; neck, a strip of land lying between Spencer Cove and Trappe Creek in Worcester County.

**Newport**; post village in Charles County.

**New Step**; small branch of Horsepen Branch in Prince George County.

**Newton**; post village in Caroline County.

**Newtown**; neck, a narrow strip of land between Breton and St. Clement bays in St. Mary County.

**Newtown**; village in Kent County.

**New Valley**; village in Cecil County.

**New Windsor**; town in Carroll County on the Western Maryland Railroad. Population, 430.

**Nichols**; small mountain ridge in Allegany County.

**Nicholson**; village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Niles Mill**; village in Garrett County.

**Ninepin Bridge**; creek, a tributary of Pocomoke River in Worcester County.

**Norbeck**; post village in Montgomery County.

**Norman**; cove, a small inlet at mouth of Honga River in Dorchester County.

**Norman**; creek, a small tributary of Middle River in Baltimore County.

**Norman**; post village in Queen Anne County.

**Norrisville**; post village in Harford County.

**North**; small branch of Laurel Run in Garrett County.

**North**; branch, a tributary of Castleman River in Garrett County.

**North**; branch, a small tributary of Rock Creek in Montgomery County.

**North**; fork, a branch of Crabtree Creek in Garrett County.

**North**; fork, a small branch of Bens Branch in Frederick County.

**North**; fork, a small branch of Linganore Creek in Frederick County.

**North**; fork, a small branch of Sand Branch in Garrett County.

**North**; point in Talbot County, projecting into Eastern Bay.

**North**; run, a small tributary of South River in Anne Arundel County.

**North Branch**; village in Allegany County on the Baltimore and Ohio Railroad.

**Northbranch**; post village in Baltimore County.

**North Branch of Patapsco**; river on boundary of Carroll and Baltimore counties, tributary to Patapsco River.

**North Branch of Potomac**; river, the head branch of Potomac River, forming part of boundary between Maryland and West Virginia.

**Northeast**; branch, a small tributary to Harris Bay in Talbot County.

**Northeast**; small branch of Western Branch in Prince George County.

**Northeast**; cove, a small inlet of Holland Straits in Dorchester County.

**Northeast**; creek, a small tributary of Back River in Baltimore County.

**Northeast**; creek, a small tributary of Northeast River in Cecil County.

**Northeast**; small marshy island in Holland Straits in Dorchester County.

**Northeast**; river, a tributary to Chesapeake Bay in Cecil County.

**Northeast**; town in Cecil County. Population, 969.

**North Glade**; run, a small branch of Deep Creek in Garrett County.

**Northkey**; post village in Prince George County.

**North Point**; creek, a small tributary to Old Road Bay in Baltimore County.

**Northpoint**; post village in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Northwest**; branch, a small tributary of Anacostia River in Prince George County.

**Northwest**; branch, a small tributary to Harris Bay in Talbot County.

**Northwest**; harbor, an inlet of Patapsco River within limits of Baltimore City.

**Norwood**; post village in Montgomery County.

**Notch Cliff**; village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Notre Dame**; station in Baltimore County on the Maryland and Pennsylvania Railroad.

**Nottingham**; post village in Prince George County.

**Nutwell**; post village in Anne Arundel County.

**Nydegger**; run, a small tributary of North Branch of Potomac River in Garrett County.

**Oak**; creek, a small branch of Miles Creek in Talbot County.

**Oak**; small marshy island in Assawoman Bay in Worcester County.

**Oak Crest**; village in Prince George County on Baltimore and Ohio Railroad.

**Oakdale**; post village in Montgomery County.

**Oak Grove**; village in Prince George County.

**Oakington**; village in Harford County on the Philadelphia, Baltimore and Washington Railroad.

**Oakland**; county seat of Garrett County on the Baltimore and Ohio Railroad. Population, 1,170.

**Oakland**; village in Baltimore County.

**Oakland Mills**; post village in Howard County.

**Oakley**; post village in St. Mary County.

**Oaks**; village in St. Mary County.

**Oakville**; post village in St. Mary County.

- Oakwood**; post village in Cecil County.
- Observatory**; hill, a summit in Little Mountain in Garrett County. Elevation, 2,767 feet.
- Ocean**; post village in Allegany County on the Cumberland and Pennsylvania Railroad.
- Ocean City**; town in Worcester County on the Baltimore, Chesapeake and Atlantic Railway. Population, 365.
- Octoraro**; creek, a tributary of Susquehanna River rising in Pennsylvania and flowing through Cecil County.
- Octoraro**; village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Odenton**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore and the Philadelphia, Baltimore and Washington railroads.
- Oella**; post village in Baltimore County on the Baltimore and Ohio Railroad.
- Old Field**; point in Kent County, projecting into Sassafras River.
- Oldfield**; point in Cecil County, projecting into Elk River.
- Old Germantown**; village in Montgomery County.
- Old House**; cove, a small inlet of Little Annemessex River in Somerset County.
- Old Mill**; branch, a small tributary of Pocomoke River in Worcester County.
- Old Road**; bay, a small inlet of Patapsco River in Baltimore County.
- Oldtown**; post village in Allegany County.
- Old Womans**; gut, a small inlet of Chesapeake Bay in Harford County.
- Oliver**; point in Baltimore County, projecting into Gunpowder River.
- Olivet**; post village in Calvert County.
- Olney**; post village in Montgomery County.
- Omar**; post village in Anne Arundel County.
- Ona**; small branch of Big Pipe Creek in Carroll County.
- Ordinary**; point in Cecil County, projecting into Sassafras River.
- Oregon**; village in Baltimore County.
- Oriole**; post village in Somerset County.
- Orme**; post village in Prince George County.
- Osborne**; village in Harford County on the Philadelphia, Baltimore and Washington and the Baltimore and Ohio railroads.
- Otter**; creek, a small stream on Smith Island in Somerset County tributary to Chesapeake Bay.
- Otter**; small marshy island in Tangier Sound in Somerset County.
- Otter**; point in St. Mary County, projecting into Chesapeake Bay.
- Otter Point**; creek, a small tributary of Bush River in Harford County.
- Outward Tump**; small marshy island in Chincoteague Bay in Worcester County.
- Overshot**; run, a small tributary of Big Gunpowder Falls in Baltimore County.
- Overton**; post village in Kent County.
- Owens**; creek, a small tributary of Nanticoke River in Dorchester County.
- Owing Mills**; post village in Baltimore County on the Western Maryland Railroad.
- Owings**; post village in Talbot County on the Chesapeake Beach Railway.
- Owl**; branch, a small tributary of Little Falls Creek in Baltimore County.
- Oxenhill**; post village in Prince George County.
- Oxford**; town in Talbot County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,243.
- Oxon**; village in Prince George County.
- Oyster**; cove, a small inlet of Chester River.
- Oyster**; creek, a small tributary to Kedge Strait in Somerset County.
- Oyster**; small pond in marshes of Worcester County.
- Oyster Shell**; creek, a small tributary of Choptank River in Dorchester County.
- Pagan**; point in St. Mary County, projecting into St. Mary River.

**Palmers**; post village in St. Mary County on the Queen Anne's Railroad.

**Palmetto**; village in Somerset County.

**Pamosa**; post village in Allegany County.

**Panther**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Paradise**; village in Allegany County on the Philadelphia, Baltimore and Washington Railroad.

**Paramount**; post village in Washington County.

**Parish**; creek, a small tributary of West River in Anne Arundel County.

**Parker**; bay, an arm of Chincoteague Bay in Worcester County.

**Parker**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.

**Parker**; creek, a small tributary to Chesapeake Bay in Calvert County.

**Parker**; small island in Herring Bay in Anne Arundel County.

**Parker**; neck, a narrow strip of land lying between Charles Creek and Honga River in Dorchester County.

**Parkhall**; post village in St. Mary County.

**Park Mills**; village in Frederick County.

**Parkton**; post village in Baltimore County on the Northern Central Railway.

**Parole**; post village in Anne Arundel County.

**Parran**; post village in Calvert County.

**Parson**; creek, a small tributary of Patuxent River in St. Mary County.

**Parson**; small island in Eastern Bay in Queen Anne County.

**Parsonsbury**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Patapsco**; river, a broad estuary whose head forms the harbor of Baltimore City and connects that city with Chesapeake Bay.

**Patapsco**; station in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.

**Patapsco**; station in Baltimore County on the Baltimore and Ohio Railroad.

**Patapsco**; post village in Carroll County on the Western Maryland Railroad.

**Patapsco River**; neck, a strip of land lying between Back and Patapsco rivers in Baltimore County.

**Patience**; point in Calvert County, projecting into Patuxent River.

**Patterson**; creek, a small tributary of North Branch of Potomac River in Allegany County.

**Patterson Creek**; mountain ridge separating Patterson Creek and Dan Run in Allegany County.

**Pattys**; branch, a small tributary of Pocomoke River in Worcester County.

**Patuxent**; river, a tributary of Chesapeake Bay.

**Patuxent**; village in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.

**Patuxent**; village in Charles County.

**Passerdyke**; creek, a tributary of Wicomico Creek on boundary between Wicomico and Somerset counties.

**Pawn**; run, a small tributary of Deep Creek in Garrett County.

**Pawpaw**; cove, a small inlet of Chesapeake Bay in Talbot County.

**Pawpaw**; creek, a small tributary of Chincoteague Bay in Worcester County.

**Pawpaw**; point in St. Mary County, projecting into Breton Bay.

**Pea**; ridge, a spur of Big Savage Mountain separating Bluelick and Muddick runs in Garrett County.

**Peach**; point in Worcester County, projecting into St. Martin River.

**Peachblossom**; creek, a small tributary of Tred Avon River in Talbot County.

**Peapatch**; ridge, a spur of Meadow Mountain separating Big and Bear Pen runs in Garrett County.

**Pearce**; creek, a small tributary of Elk River in Cecil County.



- Pearce**; neck, a strip of land between Cabin John and Pearce creeks in Cecil County.
- Pearl**; branch, a small tributary of Chester River in Queen Anne County.
- Pearre**; post village in Washington County.
- Pearson**; post village in St. Mary County.
- Pecks**; creek, a small tributary to Assawoman Bay in Worcester County.
- Pecktonville**; village in Washington County.
- Peddler**; run, a small tributary of Susquehanna River in Harford County.
- Pekin**; post village in Allegany County.
- Peninsula Junction**; post village in Somerset County.
- Pen Knife**; point in Dorchester County, projecting into Nanticoke River.
- Perch**; creek, a small tributary of Elk River in Cecil County.
- Perkins**; creek, a small tributary of Shingle Landing Prong in Worcester County.
- Perryhall**; post village in Baltimore County.
- Perryman**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.
- Perryville**; town in Cecil County on the Pennsylvania and the Philadelphia, Baltimore and Washington railroads. Population, 770.
- Persimmon**; creek, a small tributary of Patuxent River in St. Mary County.
- Persimmon**; small island in Susquehanna River in Cecil County.
- Persimmon**; point in Anne Arundel County, projecting into Magothy River.
- Persimmon**; point in Somerset County, projecting into Big Annemessex River.
- Peters**; creek, a small tributary of Quantico Creek in Wicomico County.
- Peters**; run, a small branch of Town Creek in Allegany County.
- Petersville**; village in Frederick County.
- Philip**; creek, a small branch of East Fork of Langford Bay in Kent County.
- Phillips**; creek, a small tributary of Choptank River in Dorchester County.
- Philopolis**; post village in Baltimore County.
- Phoenix**; post village in Baltimore County on the Northern Central Railway.
- Phoenix**; village in Allegany County.
- Piccowaxton**; creek, a small tributary of Potomac River in Charles County.
- Pickering**; creek, a small tributary of Front Wye River in Talbot County.
- Pigeon**; creek, a small tributary to Monie Bay in Somerset County.
- Pigskin**; small mountain ridge in Washington County extending into Pennsylvania.
- Pikes**; creek, a small tributary of Chincoteague Bay in Worcester County.
- Pikesville**; village in Baltimore County.
- Pilot**; village in Cecil County.
- Pindell**; post village in Anne Arundel County on the Chesapeake Beach Railway.
- Pine**; hill, a summit in Garrett County. Elevation, 2,600 feet.
- Pine**; small mountain ridge in Allegany County.
- Pine Hill**; village in Baltimore County.
- Pine Orchard**; village in Howard County.
- Pine Swamp**; run, a small tributary of Savage River in Garrett County.
- Piney**; branch, a small tributary of Mattawoman Creek in Charles County.
- Piney**; branch, a small tributary of Patapsco River in Carroll County.
- Piney**; creek, a small tributary of Chester River in Queen Anne County.
- Piney**; creek, a small tributary of Gunpowder Falls in Baltimore County.
- Piney**; creek, a small tributary of Monocacy River in Carroll County.
- Piney**; creek, a small tributary to Pine Creek Cove in Cecil County.
- Piney**; small marshy island at mouth of Manokin River in Somerset County.
- Piney**; small marshy island in Assawoman Bay in Worcester County.
- Piney**; small island in St. Martin River in Worcester County.

**Piney**; neck, a strip of land lying between Wye River and Eastern Bay in Queen Anne County.

**Piney**; mountain, a part of the Alleghany Front in Alleghany County. Elevation, 2,407 feet.

**Piney**; point in Baltimore County, projecting into Middle River.

**Piney**; point in Harford County, projecting into Gunpowder River.

**Piney**; point in Kent County, projecting into Chester River.

**Piney**; point in Queen Anne County, projecting into Prospect Bay.

**Piney**; point in St. Mary County, projecting into Potomac River. A light-house is erected thereon.

**Piney**; ridge, a spur of Green Mountain in Alleghany County.

**Piney**; run, a small branch of Licking Run in Anne Arundel County.

**Piney**; run, a small branch of Muddy Creek in Garrett County.

**Piney**; run, a small branch of Western Run in Baltimore County.

**Piney**; run, a small tributary of Patapsco River in Carroll County.

**Piney Creek**; cove, a small inlet of Elk River in Cecil County.

**Pineygrove**; post village in Alleghany County.

**Piney Island**; cove, a small inlet of Tangier Sound in Dorchester County.

**Piney point**; post village in St. Mary County.

**Piney Ridge**; run, a small tributary of Fifteenmile Run in Alleghany County.

**Pinto**; post village in Alleghany County.

**Piscataway**; creek, a tributary of Potomac River in Prince George County.

**Piscataway**; post village in Prince George County. Population, 95.

**Pisgah**; post village in Charles County.

**Pittsville**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Plaindealing**; creek, a small tributary of Tred Avon River in Talbot County.

**Plane No. Four**; post village in Frederick County on the Baltimore and Ohio Railroad.

**Pleasanthill**; post village in Cecil County.

**Pleasantina**; village in Anne Arundel County.

**Pleasant Valley**; run, a small tributary of North Branch of Castleman River in Garrett County.

**Pleasantville**; post village in Harford County.

**Plowders**; wharf on Wicomico River in St. Mary County.

**Plum**; branch, a small tributary of Nanticoke River in Dorchester County.

**Plum**; creek, a small tributary of Severn River in Anne Arundel County.

**Plum**; point in Calvert County, projecting into Chesapeake Bay.

**Plum**; point in Cecil County, projecting into Elk River.

**Plum**; point in Kent County, projecting into Chesapeake Bay.

**Plumpoint**; post village in Calvert County.

**Plumtree**; branch, a small tributary of Deer Creek in Harford County.

**Plumtree**; run, a small branch of Winters Run in Harford County.

**Pocomoke**; river on the peninsula heading in southern Delaware and flowing southwest into Chesapeake Bay.

**Pocomoke City**; town in Worcester County on the New York, Philadelphia, and Norfolk Railroad. Population, 2,124.

**Point**; branch, a small tributary of Anacostia River heading in Montgomery County and flowing through Prince George County.

**Point**; ridge, a spur of Jenkins Hill in Garrett County.

**Point Lookout**; creek, a small tributary of Potomac River in St. Mary County.

**Point No Point**; point in Dorchester County, projecting into Nanticoke River.

**Point No Point**; point in St. Mary County, projecting into Chesapeake Bay.



- Point of Rocks**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Polish**; small mountain ridge in Allegany County.
- Pomfret**; post village in Charles County.
- Pomona**; post village in Kent County.
- Pomonkey**; creek, a small tributary of Potomac River in Charles County.
- Pomonkey**; post village in Charles County.
- Pond**; creek, a small tributary of Elk River in Cecil County.
- Pond**; neck, a strip of land lying between Pond and Pearce creeks in Cecil County.
- Pond**; point in St. Mary County, projecting into St. Mary River.
- Pons**; point in Dorchester County, projecting into Chesapeake Bay.
- Pool**; small, almost entirely marshy island in Chesapeake Bay in Kent County.
- Poole**; post village in Harford County.
- Poolesville**; town in Montgomery County. Population, 236.
- Pope**; creek, a small tributary of Potomac River in Charles County.
- Pope**; small marshy island in Chincoteague Bay in Worcester County.
- Pope Creek**; post village in Charles County on the Philadelphia, Baltimore and Washington Railroad.
- Poplar**; harbor, a small inlet of Chesapeake Bay in Talbot County.
- Poplar**; island, a bit of elevated dry land in sea marshes of Dorchester County.
- Poplar**; small island in Chesapeake Bay in Talbot County.
- Poplar**; point in Worcester County, projecting into St. Martin River.
- Poplar**; village in Baltimore County on the Baltimore and Ohio Railroad.
- Poplar Hill**; creek, a small tributary of Potomac River in St. Mary County.
- Poplar Lick**; run, a small tributary of Savage River in Garrett County.
- Poplars**; post village in Calvert County.
- Poplar Springs**; post village in Howard County.
- Porpoise**; creek, a small tributary of Choptank River in Talbot County.
- Porpoise**; pond, a small inlet of Assawoman Bay in Worcester County.
- Porter**; sand bar in Back River in Baltimore County.
- Porter**; creek, a small tributary of Miles River in Talbot County.
- Porter**; village in Allegany County.
- Port Deposit**; town in Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,575.
- Port Herman**; town on Elk River in Cecil County.
- Portobello**; point in St. Mary County, projecting into St. Mary River.
- Port Republic**; post village in Calvert County.
- Port Tobacco**; creek, a small tributary of Port Tobacco River in Charles County.
- Port Tobacco**; post village in Charles County.
- Port Tobacco**; river, a tributary of Potomac River in Charles County.
- Port Tobacco**; station in Charles County on the Philadelphia, Baltimore and Washington Railroad.
- Potomac**; post village in Montgomery County.
- Potomac**; river, the largest in Maryland, heading in the southwestern part of the State, near Fairfax Stone, where it is known as the North Branch; thence it flows northeast as far as Cumberland, then turns to the southeast and is joined by the South Branch. Below the junction it flows northeast as far as Hancock, and then takes a southeast course again. At Harpers Ferry it is joined by the Shenandoah on the south and passes the Blue Ridge. Eighteen miles above Washington are the Great Falls, and below that a succession of rapids and falls extending to the District of Columbia. In this stretch it passes the fall line. Below Washington the course is southwest for 40 miles, when it again turns to the east and southeast and enters Chesapeake Bay at Point Lookout. Below Washington it is tidal, has little current, and forms an estuary. The entire drainage basin of the river is 14,479 square miles.

**Potomac**; station in Allegany County on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.

**Potter**; creek, a small tributary of Potomac River in St. Mary County.

**Powell**; landing on Wye River in Talbot County.

**Powellsville**; post village in Wicomico County.

**Powhatan**; village in Baltimore County.

**Pratt**; post village in Allegany County.

**Preston**; post village in Caroline County on the Baltimore, Chesapeake and Atlantic Railway.

**Prettyboy**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Price**; creek, a small tributary of St. Mary River in St. Mary County.

**Prices**; post village in Queen Anne County.

**Priceville**; village in Baltimore County.

**Prickly**; point in Somerset County, projecting into Manokin River.

**Priests**; point in St. Mary County, projecting into St. Mary River.

**Prince Fredericktown**; county seat of Calvert County.

**Prince George**; county, organized in 1645, is bounded on the northeast and east by Patuxent River, south by Charles County, west by Potomac River, and on the northwest by the District of Columbia and Montgomery County. The surface is rolling and well supplied with springs and running streams flowing into the two bordering rivers. The area is 482 square miles, of which more than one-half, or 174,273 acres, was under cultivation in 1900. The population for the same year was 29,898. The county seat is Upper Marlboro. It contains also the towns of Hyattsville and Laurel, with populations 1,222 and 2,079 respectively. The average magnetic declination in the county in 1900 was 4° 50' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Princess Anne**; county seat of Somerset County on the New York, Philadelphia and Norfolk Railroad. Population, 857.

**Principio**; creek, a small tributary of Furnace Creek in Cecil County.

**Principio Furnace**; post village in Cecil County.

**Principio Station**; station in Cecil County on the Philadelphia, Baltimore and Washington Railroad.

**Probasco**; landing on Wye River in Talbot County.

**Prospect**; bay, a small arm of Eastern Bay in Queen Anne County.

**Prospect**; village in Harford County.

**Protestant**; point in St. Mary County, projecting into Breton Bay.

**Providence Mill**; post village in Cecil County on the Baltimore and Ohio Railroad.

**Pry**; cove, a small inlet of Holland Straits in South Marsh in Somerset County.

**Pry**; small marshy island in Holland Straits in Somerset County.

**Pumphrey**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Punch**; point in Talbot County, projecting into Eastern Bay.

**Punch Island**; creek, a small tributary of Chesapeake Bay in Dorchester County.

**Pungers**; small creek in South Marsh in Somerset County tributary to Holland Straits.

**Purdum**; post village in Montgomery County.

**Purnell**; bay, an arm of Chincoteague Bay in Worcester County.

**Purnell**; point in Worcester County, projecting into Chincoteague Bay.

**Purnell**; pond in Worcester County drained by Pattys Branch, a tributary of Pocomoke River.

**Purnell**; pond, an inlet of Chincoteague Bay in Worcester County.

**Purslane**; run, a small tributary of Potomac River.

**Pusey**; branch, a small tributary of Dividing Creek in Worcester County.

**Putnam**; village in Harford County.

**Puzzley**; run, a stream rising in Garrett County and flowing through Pennsylvania into Whites Creek.

**Pylesville**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Quaker**; neck, a strip of land lying between East Fork of Langford Bay and Chester River in Kent County.

**Quaker**; wharf on Chester River in Kent County.

**Quantico**; creek, a tributary of Nanticoke River in Wicomico County.

**Queen Anne**; county, organized in 1706, is situated on the eastern shore of Chesapeake Bay, extending from the Delaware State line on the east to Chesapeake Bay on the west, and is bounded on the north by Chester River and south by Talbot and Caroline counties. The surface is generally low and level, and is drained by numerous creeks. The area is 376 square miles, of which almost three-fourths, or 172,396 acres, was under cultivation in 1900. The population for the same year was 18,364. The county seat is Centerville, with a population of 1,231 inhabitants in 1900. The average magnetic declination in the county in 1900 was 5° 35' west. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 50° and 55°.

**Queen Anne**; post village in Queen Anne County on the Philadelphia, Baltimore and Washington and the Queen Anne's railroads.

**Queenstown**; creek, a small tributary of Chester River in Queen Anne County.

**Queenstown**; town in Queen Anne County on the Queen Anne's Railroad. Population, 374.

**Queen Tree**; landing on Patuxent River in St. Mary County.

**Queponco**; village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Quince Orchard**; post village in Montgomery County.

**Raccoon**; creek, a small tributary to Fishing Bay in Dorchester County.

**Raccoon**; point in Somerset County, projecting into Manokin River.

**Ragged**; mountain, a spur of Polish Mountain in Allegany County.

**Ragged**; point in Dorchester County, projecting into Little Choptank River.

**Raisins**; wharf on Sassafras River in Kent County.

**Randallstown**; post village in Baltimore County.

**Randolph**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Raspeburg**; post village in Baltimore County.

**Rattlesnake**; small marshy island in Chincoteague Bay in Worcester County.

**Rattlesnake**; landing on Chincoteague Bay in Worcester County.

**Rawlings**; post village in Allegany County on the Baltimore and Ohio, and the West Virginia Central and Pittsburg railroads.

**Raxton**; village in Baltimore County.

**Rayville**; village in Baltimore County.

**Reason**; run, a small stream rising in Garrett County and flowing through Pennsylvania into Youghiogheny River.

**Reckord**; post village in Baltimore County.

**Red**; point in Cecil County, projecting into Northeast River.

**Red**; outlying broken ridge west of and parallel to Meadow Mountain in Garrett County.

**Red**; run, a small branch of Big Piney Run in Garrett County.

**Reddy**; small branch of Hawlings River in Montgomery County.

**Redgate**; post village in St. Mary County.

**Red House**; branch, a small tributary of Tuckahoe Creek in Queen Anne County.

**Red House**; creek, a small tributary of Back River in Baltimore County.

**Redhouse**; post village in Garrett County.

- Bedland**; post village in Montgomery County.
- Red Lion**; branch, a small tributary of Chester River in Queen Anne County.
- Reed**; creek, a small tributary of Chester River in Queen Anne County.
- Reeder**; wharf on Patuxent River in St. Mary County.
- Reeds**; creek, a small tributary of Choptank River in Talbot County.
- Reedsgrove**; post village in Somerset County.
- Reedy**; small marshy island in Assawoman Bay in Worcester County.
- Reedy**; small marshy island in Isle of Wight Bay in Worcester County.
- Rehobeth**; post village in Somerset County.
- Reid**; post village in Washington County on the Western Maryland Railroad.
- Reistertown**; post village in Baltimore County.
- Relay**; station in Baltimore County on the Baltimore and Ohio Railroad.
- Renix**; village in Allegany County on the Baltimore and Ohio Railroad.
- Renonco**; creek, a small tributary of Nanticoke River in Wicomico County.
- Revell**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Revels**; neck, a strip of land lying between Kings Creek and Back River in Somerset County.
- Bewastico**; creek, a tributary of Nanticoke River in Wicomico County.
- Reybold**; wharf on Elk River in Cecil County.
- Rhine**; creek, a tributary of Cherry Creek in Garrett County.
- Rhode**; hill, a summit in Garrett County.
- Rhode**; river, a tributary of West River in Anne Arundel County.
- Rhodesdale**; post village in Dorchester County on the Baltimore, Chesapeake and Atlantic Railway.
- Rich**; small marshy island in Assawoman Bay in Worcester County.
- Richardsmere**; post village in Cecil County.
- Richland**; cove, a small inlet of Chesapeake Bay in Dorchester County.
- Richland**; point in Dorchester County, projecting into Chesapeake Bay.
- Rick**; neck, a strip of land between Elk and Sassafras rivers in Cecil County.
- Rickett**; point in Harford County, projecting into Gunpowder River.
- Ricks**; point in Worcester County, projecting into Chincoteague Bay.
- Rider**; post village in Baltimore County.
- Ridge**; post village in St. Mary County.
- Ridgely**; post village in Caroline County on the Philadelphia, Baltimore and Washington Railroad.
- Ridgeville**; village in Carroll County.
- Ridgley**; cove, a small inlet of Middle Branch of Patapsco River within chartered limits of Baltimore City.
- Ridgley**; hill, a summit in Garrett County. Height, 2,617 feet.
- Ridout**; creek, a small tributary of Whitehall River in Anne Arundel County.
- Riggs Mills**; village in Prince George County.
- Rioll**; cove, a small inlet of Little Choptank River in Dorchester County.
- Riley**; cove, a small inlet of Chincoteague Bay in Worcester County.
- Ripley**; post village in Charles County.
- Rising Sun**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad. Population, 382.
- Ritchie**; post village in Prince George County on the Chesapeake Beach Railway.
- River**; hill, a summit in Garrett County. Elevation, 2,700 feet.
- Riverdale**; post village in Prince George County on the Baltimore and Ohio Railroad.
- Riverside**; post village in Charles County.
- Riverside**; village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.

- River Springs**; post village in St. Mary County.
- Riverton**; post village in Wicomico County.
- Riverview**; post village in Anne Arundel County.
- River View**; village in Prince George County.
- Rives**; village in Prince George County.
- Roach**; point in Cecil County, projecting into Northeast River.
- Roaring**; point in Wicomico County, projecting into Nanticoke River.
- Roberts**; small island in Susquehanna River in Harford County.
- Roberts**; post village in Queen Anne County.
- Roberts**; village in Allegany County on the Baltimore and Ohio Railroad.
- Robin**; cove, a small inlet of Chester River in Queen Anne County.
- Robin**; point in Harford County, projecting into Chesapeake Bay.
- Robins**; branch, a small tributary of Choptank River in Caroline County.
- Robins**; creek, a small tributary to Chincoteague Bay in Worcester County.
- Robins**; marsh in Chincoteague Bay in Worcester County.
- Robinson**; neck, a strip of land between Beaverdam and St. John creeks in Dorchester County.
- Robinson**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Rock**; creek, a small branch of Carroll Creek in Frederick County.
- Rock**; creek, a small tributary to Chesapeake Bay in Somerset County.
- Rock**; creek, a small tributary of Potomac River in Montgomery County.
- Rock**; creek, a small tributary of Patuxent River in Calvert County.
- Rock**; creek, a small tributary of Tangier Sound in Somerset County.
- Rock**; creek, a small tributary of Patuxent River in Prince George County.
- Rock**; creek, a small tributary of Patapsco River in Anne Arundel County.
- Rock**; hole, a small inlet of Tangier Sound in Somerset County.
- Rock**; point in Anne Arundel County, projecting into Patapsco River.
- Rock**; point in Charles County, projecting into Wicomico River.
- Rock**; run, a small branch of Buffalo Creek in Garrett County.
- Rock**; run, a small tributary of Susquehanna River in Cecil County.
- Rock**; run, a small tributary of Susquehanna River in Harford County.
- Rockawalking**; creek, a tributary of Wicomico River in Wicomico County.
- Rockawalking**; post village in Wicomico County.
- Rockburn**; branch, a small tributary of Patapsco River in Howard County.
- Rockdale**; village in Baltimore County.
- Rock Gully**; creek, a small branch of Evitts Creek in Allegany County.
- Rockhall**; creek, a small tributary to Chesapeake Bay in Kent County.
- Rockhall**; landing on Chesapeake Bay in Kent County.
- Rockhall**; post village in Kent County.
- Rockland**; village in Baltimore County on the Northern Central Railway.
- Rockpoint**; post village in Charles County.
- Rock Run**; village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Rocks**; post village in Harford County.
- Rocksprings**; post village in Cecil County.
- Rockville**; county seat of Montgomery County on the Baltimore and Ohio Railroad. Population, 1,110.
- Rocky**; branch, a small tributary of Little Gunpowder Falls in Harford County.
- Rocky**; point in Baltimore County, projecting into Back River.
- Rocky**; point in Cecil County, projecting into Chesapeake Bay.
- Rockyridge**; post village in Frederick County on the Emmitsburg and the Western Maryland railroads.
- Roe**; post village in Queen Anne County

- Rogers**; village in Baltimore County on the Northern Central Railway.
- Rogue Harbor**; branch, a small tributary of Little Patuxent River in Anne Arundel County.
- Rogues**; harbor, a small inlet of Elk River in Cecil County.
- Rohrersville**; post village in Washington County on the Baltimore and Ohio Railroad.
- Rollin**; village in Calvert County.
- Rolphs**; post village in Queen Anne County.
- Roman**; nose, a mountain ridge in Garrett County. Elevation, 3,006 feet.
- Romney**; creek, a small tributary to Chesapeake Bay in Harford County.
- Rosaryville**; post village in Prince George County.
- Rosecroft**; post village in Prince George County.
- Rosedale**; village in Baltimore County on the Baltimore and Ohio Railroad.
- Rose Neck**; point in Dorchester County, projecting into Fishing Bay.
- Roslyn**; post village in Baltimore County.
- Ross**; small island in Susquehanna River in Harford County.
- Rossville**; post village in Baltimore County on the Baltimore and Ohio Railroad.
- Rosten**; creek, a small tributary of Chester River in Queen Anne County.
- Rough**; small island in Susquehanna River in Cecil County.
- Round**; bay, a small inlet of Severn River in Anne Arundel County.
- Round Glade**; run, a small tributary of Youghiogheny River in Garrett County.
- Round Bay**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Roundtop**; hill, a summit in Tonoloway Ridge. Elevation, 1,388 feet.
- Roundtop**; wharf on Chester River in Kent County.
- Rover**; post village in Howard County.
- Rowie**; village in Prince George County.
- Rowland**; small island in Susquehanna River in Harford County.
- Rowlandsville**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Rowley**; cove, an inlet of Chincoteague Bay in Worcester County.
- Roxbury**; post village in Washington County on the Baltimore and Ohio Railroad.
- Roxbury Mills**; post village in Howard County.
- Royal Oak**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway.
- Royal Oak**; village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Royston**; small island at mouth of Broad Creek in Talbot County.
- Ruhl**; village in Baltimore County.
- Rush**; village in Allegany County.
- Rush**; post village in Allegany County.
- Rushville**; village in Montgomery County.
- Russell**; branch, a small tributary of Dry Seneca Creek in Montgomery County.
- Ruthsburg**; post village in Queen Anne County.
- Rutland**; post village in Anne Arundel County.
- Rutledge**; post village in Harford County.
- Ryceville**; post village in Charles County.
- Sabellasville**; post village in Frederick County on the Western Maryland Railroad.
- Sackertown**; village in Somerset County.
- St. Augustine**; post village in Cecil County.
- St. Catherine**; small island in Potomac River in St. Mary County.
- St. Catherine**; small island in Susquehanna River in Harford County.
- St. Catherine**; sound, a small inlet of Potomac River in St. Mary County.
- St. Clement**; bay, an inlet of Potomac River in St. Mary County.



- St. Clement**; creek, a tributary to St. Clement Bay in St. Mary County.
- St. Clement Bay**; village in St. Mary County.
- St. George**; creek, a small tributary of Potomac River in St. Mary County.
- St. George**; island in Potomac River in St. Mary County.
- St. George**; post village in Baltimore County.
- St. George Island**; post village in St. Mary County.
- St. Helena**; small island in Round Bay in Anne Arundel County.
- St. Inigoes**; creek, a small tributary of St. Mary River in St. Mary County.
- St. Inigoes**; post village in St. Mary County.
- St. James Corners**; village in Baltimore County.
- St. James School**; post village in Washington County.
- St. Jerome**; creek, a small tributary to Chesapeake Bay in St. Mary County.
- St. Jerome**; point in St. Mary County, projecting into Chesapeake Bay.
- St. John**; creek, a small tributary of Patuxent River in Calvert County.
- St. John**; creek, a small tributary of Punch Island Creek in Dorchester County.
- St. John**; creek, a small tributary of Patuxent River in St. Mary County.
- St. John**; rock, a summit on Big Savage Mountain. Elevation, 2,930 feet.
- St. Leonard**; creek, a small tributary of Patuxent River in Calvert County.
- St. Leonard**; post village in Calvert County.
- St. Margaret**; small island in Wicomico River in St. Mary County.
- St. Margaret**; village in Anne Arundel County.
- St. Martin**; post village in Worcester County on the Baltimore, Chesapeake and Atlantic Railway.
- St. Mary**; county, settled in 1634, occupies the southeast extremity of the western shore of the Chesapeake Bay, and forms a peninsula bounded on the southwest by Potomac River, on the northeast by the bay and Patuxent River, and northwest by Charles County. The surface of the county is varied, the northwestern portion being undulated, while the southeastern portion is mostly level and low. It is well drained by numerous creeks and branches. The area is 372 square miles, of which nearly one-half, or 109,553 acres, was under cultivation in 1900. The population for the same year was 17,182. The county seat is Leonardtown. The average magnetic declination in the county in 1900 was  $4^{\circ} 30'$ . The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between  $55^{\circ}$  and  $60^{\circ}$ .
- St. Mary**; post village in St. Mary County.
- St. Mary**; river, an estuary flowing into Potomac River near its mouth.
- St. Michaels**; post village in Talbot County on the Baltimore, Chesapeake and Atlantic Railway. Population, 1,043.
- St. Patrick**; creek, a small tributary to St. Clement Bay in St. Mary County.
- St. Peters**; creek, a small tributary of Manokin River in Somerset County.
- St. Pierre**; small marshy island in Manokin River in Somerset County.
- St. Pierre**; point in Somerset County, projecting into Manokin River.
- St. Stephen**; village in Somerset County.
- Salem**; post village in Dorchester County.
- Salisbury**; county seat of Wicomico County on the Baltimore, Chesapeake and Atlantic and the New York, Philadelphia and Norfolk railroads. Population, 4,277.
- Salt Block**; mountain in Garrett County. Elevation, 2,768 feet.
- Saltblock**; run, a small tributary of Youghiogheny River in Garrett County.
- Saltgrass**; point in Worcester County, projecting into St. Martin River.
- Saltpeter**; creek, a small tributary of Bush River in Baltimore County.
- Sampson**; rock, a summit in Big Savage Mountain. Elevation, 2,942 feet.
- Sams**; creek, a small tributary of Piney Branch in Carroll County.
- Sand**; run, a tributary of North Branch of Potomac River in Garrett County.

**Sandgates**; post village in St. Mary County.

**Sandy**; branch, a small tributary of Potomac River in Montgomery County.

**Sandy**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Sandy**; point in Calvert County, projecting into Patuxent River.

**Sandy**; point in Harford County, projecting into Bush River.

**Sandy**; point in Harford County, projecting into Chesapeake Bay.

**Sandy**; point in Worcester County, projecting into Chincoteague Bay.

**Sandy**; point in Worcester County, projecting into Sinepuxent Bay.

**Sandy Bottom**; village in Kent County.

**Sandy Hill**; landing on Nanticoke River in Wicomico County.

**Sandy Hook**; village in Washington County on the Baltimore and Ohio Railroad.

**Sandy Point**; small marshy island in Sinepuxent Bay in Worcester County.

**Sandyspring**; post village in Montgomery County.

**Sang**; run, a small tributary of Youghiogheny River in Garrett County.

**Sang Run**; post village in Garrett County.

**Sassafras**; post village in Kent County.

**Sassafras**; neck, a strip of land lying between Sassafras and Bohemia rivers in Cecil County.

**Sassafras**; river on boundary between Cecil and Kent counties, a tributary to Chesapeake Bay.

**Saunders**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Savage**; post village in Howard County on the Baltimore and Ohio Railroad.

**Savage**; river, tributary of North Branch of Potomac River in Garrett County.

**Savannah**; small lake drained by Jack Creek, a tributary of Nanticoke River in Dorchester County.

**Saw Mill**; branch, a small tributary of Furnace Creek in Anne Arundel County.

**Sawmill**; branch, a small tributary of Little Gunpowder Falls in Baltimore County.

**Sawmill**; creek, a small tributary of Sassafras River in Kent County.

**Sawney**; cove, a small inlet of Chesapeake Bay in Somerset County.

**Sawpit**; run, a small tributary of Town Creek in Allegany County.

**Scaffold**; creek, a small tributary of West River in Anne Arundel County.

**Scaggsville**; post village in Howard County.

**Scarboro**; creek, a small tributary to Chincoteague Bay in Worcester County.

**Scarboro**; post village in Harford County on the Philadelphia, Baltimore and Washington Railroad.

**Scarff**; post village in Harford County.

**Schoolhouse**; hill in Harford County.

**Schoolhouse**; run, a small tributary of Castleman River in Garrett County.

**Scotchman**; creek, a small tributary of Bohemia River in Cecil County.

**Scotland**; post village in St. Mary County.

**Scott**; point in Somerset County, projecting into Big Annemessex River.

**Scott Level**; village in Baltimore County.

**Scotts**; landing on Chincoteague Bay in Worcester County.

**Seabrook**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Seat Pleasant**; post village in Prince George County.

**Sea Wall Junction**; village in Anne Arundel County on the Baltimore and Ohio Railroad.

**Second**; creek, a small tributary of Patuxent River in St. Mary County.

**Second Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Secretary**; creek, a small tributary of Choptank River in Dorchester County.

**Secretary**; village in Dorchester County. Population, 410.

**Selby**; bay, a small inlet at mouth of South River in Anne Arundel County.

**Selbysport**; post village in Garrett County on the Baltimore and Ohio Railroad.



**Sellman**; post village in Montgomery County.

**Seneca**; creek, a small tributary to Chesapeake Bay in Baltimore County.

**Seneca**; point in Cecil County, projecting into Northeast River.

**Seneca**; post village in Montgomery County.

**Severn**; post village in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.

**Severn**; river in Anne Arundel County flowing into Chesapeake Bay.

**Severn**; run, a small tributary of Severn River in Anne Arundel County.

**Sewell**; post village in Harford County on the Baltimore and Ohio Railroad.

**Shad**; point in Wicomico County, projecting into Wicomico River.

**Shadow Hall**; point in Cecil County, projecting into Furnace Creek.

**Shadyside**; post village in Anne Arundel County.

**Shaft**; post village in Allegany County.

**Shallow**; creek, a small tributary of Patapsco River in Baltimore County.

**Shamburg**; village in Baltimore County.

**Shane**; post village in Baltimore County.

**Sharon**; post village in Harford County on the Maryland and Pennsylvania Railroad.

**Sharperville**; village in Prince George County.

**Sharps**; small island in Chesapeake Bay in Dorchester County.

**Sharps**; point in Wicomico County, projecting into Wicomico River.

**Sharpsburg**; town in Washington County. Population, 1,030.

**Sharptown**; town in Wicomico County. Population, 529.

**Shaw**; bay, a small inlet of Eastern Bay in Talbot County.

**Shawan**; village in Baltimore County.

**Shawsville**; village in Harford County.

**Sheepshead**; harbor, an inlet of Kedge Straits in Somerset County.

**Shellcorn**; wharf on Sassafras River in Kent County.

**Shelltown**; post village in Somerset County.

**Sheppard**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.

**Sheridan**; point in Calvert County, projecting into Patuxent River.

**Sheridan Point**; post village in Calvert County.

**Sherwood**; village in Baltimore County on the Northern Central Railway.

**Sherwood**; post village in Talbot County.

**Shields**; run, a small tributary of North Branch of Potomac River in Garrett County.

**Shingle**; landing on Shingle Landing Prong in Worcester County.

**Shingle Landing**; prong, a small tributary of St. Martin River in Worcester County.

**Ship**; cove, a small inlet of Chester River in Kent County.

**Shipley**; point in Cecil County, projecting into Furnace Creek.

**Shipley**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Shipping**; creek, a small tributary to Eastern Bay in Queen Anne County.

**Shipping**; point in St. Mary County, projecting into St. Clement Bay.

**Shirtpond**; cove, a small inlet at mouth of Big Annemessex River in Somerset County.

**Shoal**; creek, a small tributary of Choptank River in Dorchester County.

**Shock Mills**; village in Carroll County.

**Short**; point in St. Mary County, projecting into St. Martin River.

**Shorters**; landing on Backgarden Creek in Dorchester County.

**Short Line**; junction, a station in Harford County on the Baltimore and Annapolis Short Line and the Bay Ridge railroads.

**Showell**; post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Shrewsbury**; neck, a strip of land lying between Turner and Freeman creeks in Kent County.

**Shriver**; ridge, a continuation of Knobby Mountain of West Virginia separating two small branches of North Branch of Potomac River.

**Shures Landing**; post village in Harford County.

**Sickle**; hill on boundary between West Virginia and Garrett County. Elevation, 2,400 feet.

**Sideling**; hill, a mountain ridge in Washington County extending into Pennsylvania.

**Sideling Hill**; creek, a tributary of Potomac River on boundary between Allegany and Washington counties.

**Siebert**; post village in Allegany County.

**Silesia**; post village in Prince George County.

**Silver**; run, a small tributary of Big Pipe Creek in Carroll County.

**Silverhill**; post village in Prince George County.

**Silver Spring**; post village in Montgomery County on the Baltimore and Ohio Railroad.

**Simpsonville**; post village in Howard County.

**Sinepuxent**; neck, a strip of land lying between Sinepuxent and Newport bays in Worcester County.

**Sinepuxent**; village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.

**Sines**; post village in Garrett County.

**Singer**; post village in Harford County.

**Singerly**; post village and station in Cecil County on the Baltimore and Ohio Railroad.

**Skipnish**; village in Garrett County on the Baltimore and Ohio Railroad.

**Skipper**; creek, a small tributary of Chester River in Kent County.

**Skipton**; creek, a small tributary of Wye River in Talbot County.

**Skipton**; post village in Talbot County.

**Sledds**; point in Anne Arundel County, projecting into Curtis Bay.

**Slidell**; post village in Montgomery County.

**Sligo**; post village in Montgomery County.

**Sligo**; small branch of Northwest Branch in Prince George County.

**Smith**; cove, a small inlet of Choptank River in Dorchester County.

**Smith**; cove, a small inlet of Middle Branch of Patapsco River within limits of Baltimore city.

**Smith**; creek, a small tributary of Potomac River in St. Mary County.

**Smith**; small island in Chesapeake Bay in Somerset County.

**Smith**; point in Talbot County, projecting into Harris Creek.

**Smithsburg**; town in Washington County. Population, 462.

**Smithville**; post village in Caroline County.

**Smithville**; village in Dorchester County.

**Smithville**; village in Kent County.

**Smokehouse**; cove, a small inlet of St. Martin River in Worcester County.

**Snaggy**; hill in Garrett County.

**Snake**; small island in Susquehanna River in Harford County.

**Snow Hill**; county seat of Worcester County on the Philadelphia, Baltimore and Washington Railroad. Population, 1,596.

**Snowy**; creek, a small branch of Youghiogheny River in Garrett County.

**Sollers**; point in Baltimore County, projecting into Patapsco River.

**Sollers**; post village in Calvert County on the Northern Central Railway.

**Solley**; post village in Anne Arundel County.

**Solomon**; ridge, a spur of Meadow Mountain separating Dry and Big runs in Garrett County.

**Solomons**; post village in Calvert County.

**Solomons Lump**; small island in Kedge Straits in Somerset County. A light-house is erected thereon.

**Somerset**; county, is the southernmost bay county of the Eastern Shore. It is bounded on the north by Wicomico County, east by Worcester County, south by Pocomoke River and Sound, and west by Chesapeake Bay. The surface is generally level, but sufficiently undulating to afford good drainage. The area is 362 square miles, of which more than a third, or 82,650 acres, was under cultivation in 1900. The population for the same year was 25,193. The county seat is Princess Anne. It also contains the town of Crisfield, of 3,165 inhabitants in 1900. The average magnetic declination in the county in 1900 was  $5^{\circ} 00'$ . The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between  $55^{\circ}$  and  $60^{\circ}$ .

**Somerset**; creek, a small tributary of Wicomico Creek in Somerset County.

**Sopers**; creek, a small branch of Little Bennetts Creek in Montgomery County.

**Sopers**; hill in Montgomery County. Elevation, 469.

**Sotterly**; point in St. Mary County, projecting into Patuxent River.

**Sotterly**; post village in St. Mary County.

**South**; branch, a tributary of Bear Creek in Garrett County.

**South**; branch, a tributary of Shingle Landing Prong in Worcester County.

**South**; branch, a tributary of Castleman River in Garrett County.

**South**; branch, a tributary of Laurel Run in Garrett County.

**South**; fork, a branch of Linganore Creek in Frederick County.

**South**; fork, a tributary of Bens Creek in Frederick County.

**South**; fork, a tributary of Green Run in Wicomico County.

**South**; fork, a tributary of Sand Run in Garrett County.

**South**; hammock, small bits of marshy land in Assawoman Bay in Worcester County.

**South**; large marshy island in Somerset County between Holland and Kedge straits.

**South**; river in Anne Arundel County flowing into Chesapeake Bay.

**South Branch of Patapsco**; river, on boundary between Howard and Carroll counties.

**South Cumberland**; village in Allegany County.

**Southeast**; creek, a small tributary of Chester River in Queen Anne County.

**South River**; post village in Anne Arundel County.

**South Tuscarora**; creek, a small tributary of Potomac River in Frederick County.

**Southwest**; small branch of Western Branch in Prince George County.

**Spaniards**; neck, a strip of land lying between Chester and Corsica rivers in Queen Anne County.

**Sparks**; village in Baltimore County on the Northern Central Railway.

**Sparrow**; point in Baltimore County, projecting into Patapsco River.

**Sparrow Point**; town in Baltimore County on the Northern Central Railway.

**Spaw**; creek, a small tributary to Annapolis Roads in Anne Arundel County.

**Spedden**; wharf on Hudson Creek in Dorchester County.

**Speelman Mills**; village in Garrett County.

**Spence**; cove, small inlet of Newport Bay in Worcester County.

**Spence**; post village in Worcester County.

**Spencer**; creek, a small tributary of Edge Creek in Talbot County.

**Spencer**; creek, a small tributary of Miles River in Talbot County.

**Spencer**; small island in Susquehanna River in Harford County.

**Spencers**; wharf on Town Creek in St. Mary County.

**Spencerville**; post village in Montgomery County.

**Spesutie**; large, almost entirely marshy island in Chesapeake Bay in Harford County.

**Spesutie**; narrows, a passageway separating Spesutie Island from the mainland in Harford County.

**Spielman**; post village in Washington County.

**Spiker**; run, a small tributary of Castleman River in Garrett County.

**Spook**; hill in Baltimore County.

**Spring**; creek, a small tributary of Choptank River in Caroline County.

**Spring**; creek, a small tributary of Patuxent River in St. Mary County.

**Spring**; small marshy island in Holland Straits in Dorchester County.

**Springfield**; post village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.

**Springhill**; post village in Charles County.

**Springlick**; run, a small tributary of Crabtree Creek in Garrett County.

**Spry**; small marshy island at mouth of Gunpowder River in Harford County.

**Squirrel Neck**; run, a small tributary of Georges Creek in Allegany County.

**Stabler**; hill in Montgomery County. Elevation, 571 feet.

**Stablersville**; village in Baltimore County.

**Stafford**; post village in Harford County.

**Stanley**; run, a small tributary of Swanson Creek in Prince George County.

**Stansberry**; point in Baltimore County, projecting into Back River.

**Starkley Corner**; village in Queen Anne County.

**Staub**; run, a small tributary of Georges Creek in Allegany County.

**Steele**; small island in Susquehanna River in Cecil County.

**Stemmer**; run, a small branch of Northeast Creek in Baltimore County.

**Stephensville**; post village in Queen Anne County.

**Stepney**; post village in Harford County on the Baltimore and Ohio Railroad.

**Sterrerr**; small island in Susquehanna River in Cecil County.

**Stevenson**; post village in Baltimore County on the Northern Central Railway.

**Steves Island**; village in Worcester County.

**Stewart**; neck, a strip of land lying between Kings and Jones creeks and Manokin River in Somerset County.

**Still**; small pond at junction of Churn and Stillpond creeks in Kent County.

**Stillpond**; creek, a small tributary to Still Pond in Kent County.

**Stillpond**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.

**Stirrup**; run, a small branch of Deer Creek in Harford County.

**Stockton**; town in Worcester County.

**Stoddart**; point in Charles County, projecting into Wicomico River.

**Stone**; point in Harford County, projecting into Chesapeake Bay.

**Stone**; run, a small branch of Octararo Creek in Cecil County.

**Stone**; wharf on St. Clement Bay in St. Mary County.

**Stone House**; cove, a small inlet of Curtis Bay in Anne Arundel County.

**Stony**; run, a small tributary of Patapsco River in Anne Arundel County.

**Stony**; run, a small branch of Northeast River in Cecil County.

**Stony**; run, a small branch of North Branch of Potomac River in Garrett County.

**Stony**; creek, a tributary of Patapsco River in Anne Arundel County.

**Stony**; creek, a tributary of Monocacy River in Frederick County.

**Stony**; point in Anne Arundel County, projecting into Patapsco River.

**Stony**; point in Cecil County, projecting into Elk River.

**Stony Run**; station in Anne Arundel County on the Philadelphia, Baltimore and Washington Railroad.

**Stratford**; small mountain ridge in Allegany County lying between Sawpit Run and Town Creek.

- Strawberry**; creek, a small tributary of Middle River in Baltimore County.
- Street**; post village in Harford County.
- Striking**; marshy bit of land in Worcester County in Chincoteague Bay.
- Stringtown**; village in Baltimore County.
- Stump**; small island in Susquehanna River in Harford County.
- Stump**; point in Cecil County, projecting into Chesapeake Bay.
- Sturges**; creek, a small branch of Nassawango Creek in Worcester County.
- Sudbrook Park**; post village in Baltimore County.
- Sudlersville**; post village in Queen Anne County on the Philadelphia, Baltimore and Washington Railroad.
- Sudley**; post village in Anne Arundel County.
- Sue**; creek, a small tributary of Middle River in Baltimore County.
- Sue**; point in Baltimore County, projecting into Middle River.
- Sugar**; point in Worcester County, projecting into Choptank River.
- Sugar Hill**; village in Harford County.
- Sugarland**; post village in Montgomery County.
- Sugar Loaf**; mountain, a hill in Montgomery County. Elevation, 1,281 feet.
- Suitland**; village in Prince George County.
- Sumiac**; pond in Wicomico County drained by Beaverdam Creek, a tributary of Wicomico River.
- Summerfield**; village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Summerville**; village in Calvert County.
- Sunderland**; post village in Calvert County.
- Sunnybrook**; post village in Baltimore County.
- Sunnyside**; post village in Garrett County.
- Sunnyside**; village in Prince George County on Baltimore and Ohio Railroad.
- Susquehanna**; neck, a strip of land lying between Slaughter and Woolford creeks in Dorchester County.
- Swallow**; falls in Youghiogheny River in Garrett County.
- Swamp**; run, a small tributary of Little Swamp River in Garrett County.
- Swan**; creek, a small tributary of Patapsco River in Anne Arundel County.
- Swan**; creek, a small tributary to Chesapeake Bay in Harford County.
- Swan**; creek, a tributary of Sassafras River in Kent County.
- Swan**; small island in Chesapeake Bay in Dorchester County.
- Swan**; small marshy island in Chesapeake Bay in Somerset County.
- Swan**; gut, a small branch of Greys Creek in Worcester County.
- Swan**; point in Charles County, projecting into Potomac River.
- Swan**; point in Kent County, projecting into Chesapeake Bay.
- Swan Creek**; village in Harford County on the Baltimore and Ohio and the Philadelphia, Baltimore and Washington railroads.
- Swanson**; creek, a small tributary of Patuxent River on boundary between Prince George and Charles counties.
- Swanton**; post village in Garrett County on the Baltimore and Ohio Railroad.
- Sweetair**; post village in Baltimore County.
- Sykesville**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Sylmar**; post village in Cecil County on the Philadelphia, Baltimore and Washington Railroad.
- Table**; rock, a summit in Backbone Mountain in Garrett County.
- Takoma**; town in Montgomery County on the Baltimore and Ohio Railroad. Population, 756.
- Talbert**; village in Prince George County on the Philadelphia, Baltimore and Washington Railroad.
- Talbot**; branch, a small tributary of Linganore Creek in Frederick County. •

**Talbot**; county, bounded southerly and southeasterly by the Choptank River and Tuckahoe Creek, northerly by Queen Anne County, and westerly by Chesapeake Bay. The surface is generally low and level and well drained by numerous streams flowing into the bay and bordering rivers. The area is 286 square miles, almost two-thirds of which, or 119,266 acres, were under cultivation in 1900. The population for the same year was 20,342. The county seat is Easton with a population of 3,074. St. Michaels and Oxford are also in this county and have a population of 1,042 and 1,243, respectively. The average magnetic declination in the county in 1900 was 5° 25' west. The annual rainfall commonly ranges between 45 and 50 inches and the mean annual temperature between 50° and 55°.

**Tally**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Taneytown**; town in Carroll County. Population 665.

**Tangier**; sound, a part of Chesapeake Bay inclosed between series of low, marshy islands and the mainland of the peninsula in Somerset County.

**Tanhouse**; creek, a small tributary to Chincoteague Bay in Worcester County.

**Tanner**; creek, a small tributary to Chesapeake Bay in St. Mary County.

**Tannery**; post village in Carroll County.

**Tanyard**; post village in Caroline County.

**Tar**; bay, a small inlet of Chesapeake Bay in Dorchester County.

**Tar Coal**; cove, a small inlet of Magothy River, in Anne Arundel County.

**Tarkiln**; run, a small tributary of Castleman River in Garrett County.

**Tars**; creek, a small tributary of Tred Avon River in Talbot County.

**Tasker Corners**; village in Garrett County.

**Tate**; landing on Deep Creek in Anne Arundel County.

**Tavern**; creek, a small tributary to Chesapeake Bay.

**Taylor**; island, a large strip of elevated dry land in sea marshes of Dorchester County.

**Taylor**; landing on Chincoteague Bay in Worcester County.

**Taylor**; point in Dorchester County, projecting into Honga River.

**Taylor**; post village in Harford County.

**Taylor Island**; post village in Dorchester County.

**Taylorville**; village in Carroll County.

**Taylorville**; village in Worcester County.

**T. B.**; post village in Prince George County.

**Teague**; creek, a small tributary of Manokin River in Somerset County.

**Tedious**; creek, a small tributary to Fishing Bay in Dorchester County.

**Templeville**; post village in Queen Anne County.

**Ten Mile**; creek, a small tributary of Little Seneca Creek in Montgomery County.

**Terrapin Sand**; cove, a small inlet of Chesapeake Bay in Somerset County.

**Terrapin Sand**; point in Somerset County, projecting into Chesapeake Bay.

**Texas**; post village in Baltimore County on the Northern Central Railway.

**Thackery**; point in Cecil County, projecting into Elk River.

**Thayerville**; post village in Garrett County.

**Theodore**; village in Cecil County.

**The Three Sisters**; three small marshy islands in Chesapeake Bay in Anne Arundel County.

**Third Mine**; branch, a small tributary of Gunpowder Falls in Baltimore County.

**Thomas**; branch, a small tributary of Patuxent River in Anne Arundel County.

**Thomas**; point in Anne Arundel County, projecting into Chesapeake Bay.

**Thomas**; post village in Dorchester County.

**Thomas**; run, a small branch of Cabin John Creek in Montgomery County.

**Thomas**; run, a small tributary of Deer Creek in Harford County.

**Thomas Run**; post village in Harford County.

**Thompson**; creek, a small branch of Cox Creek in Queen Anne County.



- Thompson**; village in Dorchester County on the Philadelphia, Baltimore and Washington Railroad.
- Thornton**; small branch of Little Gunpowder Falls in Harford County.
- Thorofare**; small passage between Gab Island and another small island in Somerset County.
- Three Fork**; run, a small tributary of North Branch of Potomac River in Garrett County.
- Thrift**; post village in Prince George County.
- Thurmont**; town in Frederick County on the Western Maryland Railroad. Population, 868.
- Tilghman**; cove, a small inlet of Chester River in Queen Anne County.
- Tilghman**; creek, a small tributary to Eastern Bay in Talbot County.
- Tilghman**; creek, a small tributary of Chester River in Queen Anne County.
- Tilghman**; small island in Talbot County separated from the mainland by Knapp Narrows.
- Tilghman**; point in Talbot County, projecting into Eastern Bay.
- Tilghman**; pond in Worcester County drained by a small branch of Pocomoke River.
- Tilghman**; post village in Talbot County on the Philadelphia, Baltimore and Washington Railroad.
- Tingles**; small marshy island in Chincoteague Bay in Worcester County.
- Tinkers**; creek, a small tributary of Piscataway Creek in Prince George County.
- Timber**; neck, a strip of land in Cecil County lying between Chesapeake Bay and Elk River.
- Timber**; ridge, a small mountain ridge in Washington County extending into Pennsylvania.
- Timmonstown**; branch, a small tributary of Pocomoke River in Worcester County.
- Timonium**; post village in Baltimore County on the Northern Central Railway.
- Timothy**; branch, a small tributary of Mattawoman Creek in Prince George County.
- Tippett**; post village in Prince George County.
- Tizzard**; small, almost entirely marshy island in Chincoteague Bay in Worcester County.
- Tobacco**; run, a small tributary of Deer Creek in Harford County.
- Tobin**; village in Baltimore County.
- Todd**; point in Dorchester County, projecting into Choptank River.
- Toddville**; post village in Dorchester County.
- Tolchester Beach**; post village in Kent County.
- Toliver**; run, a small tributary of Youghiogheny River in Garrett County.
- Tolson**; creek, a small tributary to Chesapeake Bay in Queen Anne County.
- Tom**; cove, a small inlet of Chesapeake Bay in Dorchester County.
- Tom**; point in Cecil County, projecting into Elk River.
- Tom**; ridge, a spur of Meadow Mountain extending into a bend of Middle Fork Creek in Garrett County.
- Tomakokin**; creek, a small tributary to St. Clement Bay in St. Mary County.
- Tompkinsville**; post village in Charles County.
- Toms Lick**; run, a small tributary of Little Youghiogheny River in Garrett County.
- Tonoloway**; creek, a tributary of Potomac River in Washington County.
- Tonoloway**; ridge, a continuation of Tonoloway Mountain Ridge of West Virginia into Washington County.
- Tonytank**; creek, a tributary of Wicomico River in Wicomico County.
- Toulson**; post village in Caroline County.
- Town**; creek, a small tributary of Tred Avon River in Talbot County.
- Town**; creek, a small tributary of Patuxent River in St. Mary County.
- Town**; creek, a tributary of Potomac River in Allegany County.

**Town;** hill, a long mountain ridge in Allegany County.

**Town;** point in Cecil County, projecting into Elk River.

**Town;** point in Charles County, projecting into Patuxent River.

**Town;** point in Dorchester County, projecting into Choptank River.

**Town;** point in St. Mary County, projecting into Patuxent River.

**Towncreek;** post village in Allegany County.

**Town Point;** neck, a strip of land lying between Bohemia and Elk rivers in Cecil County.

**Townpoint;** post village in Cecil County.

**Townshend;** post village in Prince George County.

**Towers;** branch, a tributary of Little Patuxent River in Anne Arundel County.

**Towson;** county seat of Baltimore County on the Maryland and Pennsylvania Railroad.

**Tracys Landing;** post village in Anne Arundel County.

**Transquaking;** river in Dorchester County flowing into Fishing Bay.

**Trap;** run, a small tributary of Youghiogeny River in Garrett County.

**Trap;** village in St. Mary County.

**Trappe;** creek, a small tributary to Newport Bay in Worcester County.

**Trappe;** landing on Trappe River in Talbot County.

**Trappe;** river in Talbot County flowing into Choptank River.

**Trappe;** village in Talbot County on the Philadelphia, Baltimore and Washington Railroad. Population, 279.

**Trappe;** village in Wicomico County.

**Travers;** wharf on Le Compte Bay in Dorchester County.

**Travilah;** post village in Montgomery County.

**Tred Avon;** river, a tributary to Choptank River in Talbot County.

**Trego;** post village in Washington County.

**Trent Hall;** creek, a small tributary of Patuxent River in St. Mary County.

**Triadelphia;** post village in Howard County.

**Trills Corner;** village in Somerset County.

**Trippe;** bay, a small inlet of Choptank River in Dorchester County.

**Trippe;** creek, a tributary of Tred Avon River in Talbot County.

**Trout;** run, a small tributary of Little Youghiogeny River in Garrett County.

**Troy;** small marshy island in Chesapeake Bay in Somerset County.

**Troy;** village in Charles County.

**Troyer;** village in Baltimore County.

**Trueman;** point in Prince George County, projecting into Patuxent River.

**Truesdell;** heights, a summit in Backbone Mountain in Garrett County. Elevation, 2,809 feet.

**Truitt;** village in Wicomico County.

**Trump;** village in Baltimore County.

**Tub Mill;** creek, a small tributary of Choptank River in Caroline County.

**Tuckahoe;** creek, a tributary of Choptank River on boundary between Queen Anne, Caroline, and Talbot counties.

**Tuckahoe;** post village in Caroline County on the Queen Anne's Railroad.

**Tull;** point in Somerset County, projecting into Wicomico River.

**Tulls Corner;** post village in Somerset County.

**Tunis Mills;** post village in Talbot County.

**Turkey;** small branch of Western Branch in Prince George County.

**Turkey;** point in Anne Arundel County, projecting into South River.

**Turkey;** point in Baltimore County, projecting into Middle Creek.

**Turkey;** point in Cecil County, projecting into Chesapeake Bay.

**Turkey;** point in Queen Anne County, projecting into Eastern Bay.

**Turkey;** run, a small branch of Stony Creek in Frederick County.



- Turkey Lodge**; hill, a ridge lying between Elk Lick and Poplar Lick runs in Garrett County.
- Turkey Neck**; point in Talbot County, projecting into Harris Creek.
- Turner**; creek, a tributary of Sassafras River in Kent County.
- Turner**; gap in Blue Ridge Mountains in Frederick County.
- Turner**; village in St. Mary County on the Baltimore, Chesapeake and Atlantic Railway.
- Turner Creek**; wharf in Kent County on Turner Creek.
- Turpin**; cove, a small inlet of Chincoteague Bay in Worcester County.
- Turtle Egg**; small marshy island in Holland Straits in Somerset County.
- Turville**; creek, a small stream in Worcester County flowing into Isle of Wight Bay.
- Tuscarora**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Tuxedo**; post village in Prince George County.
- Twiggtown**; post village in Allegany County.
- Twilley**; village in Wicomico County.
- Twitch**; cove, a small inlet of Tangier Sound in Somerset County.
- Two Johns**; post village in Caroline County.
- Twomile**; run, a small branch of Big Piney Run in Garrett County.
- Tyaskin**; post village in Wicomico County.
- Uncle**; village in St. Mary County.
- Unicorn**; branch, a small tributary of Chester River in Queen Anne County.
- Union**; run, a small tributary of Bush River in Harford County.
- Union Bridge**; town in Carroll County on the Western Maryland Railroad. Population, 663.
- Unionville**; village in Frederick County.
- Unionville**; village in Talbot County.
- Unionville**; village in Worcester County.
- Unity**; post village in Montgomery County.
- Upperco**; post village in Baltimore County.
- Upper Crossroads**; post village in Harford County.
- Upper Fairmont**; post village in Somerset County.
- Upper Ferry**; village in Wicomico County.
- Upper Hunting**; creek, a small tributary of Choptank River in Dorchester County.
- Upper Marlboro**; county seat of Prince George County on the Chesapeake Beach Railway. Population, 447.
- Urbana**; village in Frederick County.
- Vale**; post village in Harford County.
- Vale**; run, a small tributary of Georges Creek in Allegany County.
- Valentine**; creek, a small tributary of Severn River in Anne Arundel County.
- Vale Summit**; post village and station in Allegany County on the George's Creek and Cumberland Railroad.
- Valley Lee**; post village in St. Mary County.
- Valliant**; post village in Talbot County.
- Van Bibber**; post village in Harford County on the Baltimore and Ohio Railroad.
- Veazey**; neck, a strip of land lying between Bohemia River and Cabin John Creek in Cecil County.
- Velvet Rock**; branch, a small tributary of Susquehanna River in Harford County.
- Verona**; village in Baltimore County.
- Victor**; village in Somerset County.
- Vienna**; post village in Dorchester County on the Baltimore, Chesapeake and Atlantic Railway.
- Wades**; point in Talbot County, projecting into Eastern Bay.
- Wagram**; creek, a small tributary of Pocomoke River in Worcester County.

- Wakefield**; post village in Carroll County on the Western Maryland Railroad.
- Walbrook**; suburb of Baltimore City within its chartered limits on the Western Maryland Railroad.
- Waldorf**; post village in Charles County on the Philadelphia, Baltimore and Washington Railroad.
- Walker**; village in Baltimore County on the Northern Central Railway.
- Walkers Switch**; post village in Baltimore County.
- Walkersville**; town in Frederick County on the Northern Central Railway. Population, 359.
- Wallace**; creek, a small tributary of Honga River in Dorchester County.
- Wallman**; post village in Garrett County.
- Wallville**; post village in Calvert County.
- Walnut**; hill, a summit in Pea Ridge in Garrett County. Elevation, 2,770 feet.
- Walnut**; point in Anne Arundel County, projecting into Curtis Creek.
- Walnut**; small mountain ridge in Allegany County lying between Collier and Warrior mountains.
- Walnut**; village in Wicomico County.
- Walston**; village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.
- Walters**; post village in Baltimore County.
- Wango**; village in Wicomico County.
- Wann**; cove, a small inlet of East Fork of Langford Bay in Kent County.
- Ward**; village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Ward Chapel**; village in Baltimore County.
- Warehouse**; creek, a small tributary of Cox Creek in Queen Anne County.
- Waring**; village in Montgomery County on the Baltimore and Ohio Railroad.
- Warntel**; run, a small tributary of Savage Run in Garrett County.
- Warren**; post village in Baltimore County.
- Warrior**; small mountain ridge in Allegany County.
- Warrior**; run, a small tributary of North Branch of Potomac River in Allegany County.
- Warwick**; point, a summit on east bank of Savage River in Garrett County.
- Warwick**; post village in Cecil County.
- Washington**; county, situated in the western mountainous portion of the State, bounded on the north by Pennsylvania, east by Blue Ridge Mountains, south and southwest by Potomac River, and west by Allegany County. The surface is an alternation of ridges and valleys, the latter being drained by Antietam, Conococheague, and Israel creeks. The area is 458 square miles, of which more than two-thirds, or 197,948 acres, was under cultivation in 1900. The population for the same year was 45,133. The county seat is Hagerstown. Other towns are Sharpsburg and Williamsport, having populations of 1,030 and 1,472, respectively. The average magnetic declination in the county in 1900 was 4° 30'. The annual rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between 45° and 50°.
- Washington**; creek, a small tributary of Patuxent River in St. Mary County.
- Washington Grove**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Washington Junction**; station in Frederick County on the Baltimore and Ohio Railroad.
- Waterbury**; post village in Anne Arundel County on the Annapolis, Washington and Baltimore Railroad.
- Waterhole**; cove, a small inlet of Harris Bay in Talbot County.
- Waterloo**; village in Howard County.

- Watersville**; post village in Carroll County on the Baltimore and Ohio Railroad.
- Waterworks**; creek, a small tributary to Chincoteague Bay in Worcester County.
- Watkins**; point in Somerset County, projecting into Pocomoke River.
- Watkins**; post village in Montgomery County.
- Watts**; branch, a small tributary of Potomac River in Montgomery County.
- Watts**; creek, a small tributary of Choptank River in Caroline County.
- Waverly**; suburb of Baltimore City within its chartered limits.
- Wayside**; post village in Charles County.
- Wear**; point in Somerset County, projecting into Big Annemessex River.
- Webster**; post village in Harford County.
- Weem**; creek, a small tributary of Severn River in Anne Arundel County.
- Weir**; point in Baltimore County, projecting into Bush River.
- Weisburg**; village in Baltimore County.
- Welbourne**; post village in Worcester County.
- Welcome**; post village in Charles County.
- Wellhams**; post village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.
- Wellington**; post village in Somerset County.
- Wellridge**; creek, a small tributary to Tangier Sound in Somerset County.
- Welsh**; point in Cecil County, projecting into Elk River.
- Welshman**; creek, a small tributary of Patapsco River.
- Wenona**; post village in Somerset County.
- Wesley**; post village in Worcester County on the Philadelphia, Baltimore and Washington Railroad.
- West**; branch, a small tributary of Jones Falls Creek in Baltimore County.
- West**; branch, a small tributary of Little Elk River in Cecil County.
- West**; branch, a small tributary of Little Northeast Branch in Cecil County.
- West**; branch, a small stream heading in Cecil County and flowing through Delaware into Persimmon Run.
- West**; small branch of Winters Creek in Harford County.
- West**; creek, a small tributary of Little Annemessex River in Somerset County.
- West**; river, a tributary to Chesapeake Bay in Anne Arundel County.
- West**; village in Somerset County.
- West Beavercreek**; post village in Washington County.
- Western**; branch, a small tributary of Patuxent River in Prince George County.
- Western**; group of small marshy islands at mouth of Goose Creek in Somerset County.
- Western**; run, a small tributary of Beaver Dam Creek in Baltimore County.
- Westernport**; town in Allegany County on the West Virginia Central and Pittsburgh Railroad. Population, 1,008.
- Western Run**; post village in Baltimore County.
- West Falls**; village in Carroll County.
- West Friendship**; post village in Howard County.
- West Liberty**; village in Baltimore County.
- Westminster**; county seat of Carroll County on the Western Maryland Railroad. Population, 3,199.
- Westover**; post village in Somerset County on the New York, Philadelphia and Norfolk Railroad.
- Westphalia**; post village in Prince George County.
- West River**; post village in Anne Arundel County.
- Westwood**; post village in Prince George County.
- Wetipquin**; post village in Wicomico County.
- Weverton**; post village in Washington County on the Baltimore and Ohio Railroad.

**Whaleysville**; post village in Worcester County on the Baltimore, Chesapeake and Atlantic Railway.

**Whayland**; post village in Wicomico County.

**Wheaton**; post village in Montgomery County.

**Wheel**; post village in Harford County.

**Whiteburg**; post village in Worcester County.

**Whiteford**; post village in Harford County.

**Whitehall**; post village in Baltimore County on the Northern Central Railway.

**Whitehaven**; post village in Wicomico County.

**White Knob**; mountain in Garrett County.

**Whiteleysburg**; post village in Caroline County.

**Whitemarsh**; creek, a small tributary of Rhode River in Anne Arundel County.

**Whitemarsh**; post village in Baltimore County.

**Whitemarsh**; run, a small tributary of Horning Run in Baltimore County.

**White Meadow**; run, a small branch of Cherry Run in Garrett County.

**White Neck**; creek, a small tributary to St. Catharine Sound in St. Mary County.

**Whiteoak**; point in Baltimore County, projecting into Bush River.

**Whiteoak**; run, a small tributary to North Branch of Patapsco River in Carroll County.

**Whiteoak**; village in Montgomery County on the Philadelphia, Baltimore and Washington Railroad.

**Whiteoak Spring**; run, a small branch of Muddy Creek in Garrett County.

**Whiteplains**; post village in Charles County.

**White Rock**; small island in Patapsco River in Anne Arundel County.

**White Rock**; run, a small tributary of Youghiogheny River in Garrett County.

**Whites Ferry**; post village in Montgomery County.

**White Sulphur**; small branch of Fifteenmile Creek in Allegany County.

**Whitneys**; landing on Severn River in Anne Arundel County.

**Whiton**; post village in Wicomico County.

**Whittington**; point in Worcester County, projecting into Chincoteague Bay.

**Wicomico**; county, organized in 1867 from portions of Somerset and Worcester counties, with the following boundaries: north, the south boundary of the State of Delaware; east, Pocomoke River; south, Somerset and Worcester counties, and west, Nanticoke River. The surface is level. The area is 365 square miles, of which more than one-half, or 122,453 acres, was under cultivation in 1900. The county seat is Salisbury, with a population of 4,277 in 1900. The average magnetic declination in the county in 1900 was  $5^{\circ} 15'$ . The rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature between  $55^{\circ}$  and  $60^{\circ}$ .

**Wicomico**; post village in Charles County.

**Wicomico**; river, an estuary on the north side of Potomac River in Charles and St. Mary counties, forming the boundary line between the two counties. Two streams, known as Zekiah and Gilbert swamps, flow into it at its head.

**Wicomico**; river on the east shore of Maryland heading on the south boundary of Delaware and flowing southwest into Tangier Sound, an arm of Chesapeake Bay. Much of its course is bordered by marshes. Near its mouth it forms an estuary.

**Widgeon**; village in Somerset County.

**Wild Cat**; small branch of Great Seneca Creek in Montgomery County.

**Wild Cat**; creek, a small branch of Little Bennetts Creek in Montgomery County.

**Wild Cat**; point in Cecil County, projecting into Susquehanna River.

**Willards**; post village in Wicomico County on the Baltimore, Chesapeake and Atlantic Railway.

**Williams**; point in Somerset County, projecting into Pocomoke River.

**Williamsburg**; post village in Dorchester County.

**Williamsport**; town in Washington County on the Cumberland Valley and the Western Maryland railroads. Population, 1,472.

**Williston**; post village in Caroline County.

**Willoughby**; post village in Queen Anne County on the Queen Anne's Railroad.

**Willows**; post village in Calvert County.

**Wills**; creek, a small stream rising in Pennsylvania and flowing into North Branch of Potomac River in Allegany County.

**Wills**; mountain, a continuation of Knobby Mountain of West Virginia. Elevation, 1,877 feet.

**Wilna**; post village in Harford County.

**Wilson**; point in Harford County, projecting into Bush River.

**Wilson**; point in Baltimore County, projecting into Middle River.

**Wilson**; point in Kent County, projecting into Chesapeake Bay.

**Wilson**; wharf on Magothy River in Anne Arundel County.

**Wilson Point**; wharf on Sassafras River in Kent County.

**Wimbledon**; post village in Harford County.

**Wimms**; branch, a small tributary of Horsepen Branch in Prince George County.

**Winans**; station in Baltimore County on the Philadelphia, Baltimore and Washington Railroad.

**Winans**; cove, a small inlet of Patapsco River in Baltimore County.

**Winchester**; creek, a small tributary of Chester River in Queen Anne County.

**Winchester**; village in Anne Arundel County on the Baltimore and Annapolis Short Line Railroad.

**Winding**; mountain ridge in Garrett County. Elevation, 2,866 feet.

**Windlass**; run, a small branch of Bird River in Baltimore County.

**Windmill**; creek, a small branch of St. Martin River in Worcester County.

**Windmill**; point in Charles County, projecting into Potomac River.

**Windmill**; point in Dorchester County, projecting into Honga River.

**Windmill**; point in St. Mary County, projecting into St. Mary River.

**Windsor**; creek, a small tributary of Nanticoke River in Wicomico County.

**Windyhill**; post village in Talbot County.

**Winebrenner**; run, a small stream rising in Garrett County and flowing into Georges Creek in Allegany County.

**Winfield**; village in Carroll County.

**Wingate**; point in Dorchester County, projecting into Honga River.

**Wingate**; post village in Dorchester County.

**Winter**; run, a small tributary of Patapsco River in Carroll County.

**Winters**; run, a small branch of Otter Point Creek in Harford County.

**Wire**; pond, a small inlet of Isle of Wight Bay in Worcester County.

**Witchcoate**; point in Baltimore County, projecting into Back River.

**Wittman**; post village in Talbot County.

**Wolf**; gap in Big Savage Mountain in Garrett County.

**Wolf**; rock, a summit in Dans Mountain in Allegany County. Elevation, 2,796 feet.

**Wolfden**; run, a small tributary of North Branch of Potomac River in Garrett County.

**Wolfe Mill**; village in Allegany County.

**Wolftrap**; creek, a small tributary of Manokin River in Somerset County.

**Wolsey**; creek, a small tributary of Chester River in Queen Anne County.

**Wood**; small island in Susquehanna River in Harford County.

**Woodberry**; suburb of Baltimore City within its chartered limits.

**Woodbine**; post village and station in Carroll County on the Baltimore and Ohio Railroad.

- Woodbrook**; post village in Baltimore County on the Maryland and Pennsylvania Railroad.
- Woodensburg**; post village in Baltimore County on the Western Maryland Railroad.
- Woodfield**; post village in Montgomery County.
- Woodland**; creek, a small tributary of Miles River in Talbot County.
- Woodland**; post village in Talbot County.
- Woodlawn**; village in Cecil County.
- Woodmore**; post village in Prince George County.
- Woods**; point in Worcester County, projecting into St. Martin River.
- Woodsboro**; post village in Frederick County on the Northern Central Railway.
- Woodside**; post village in Montgomery County on the Baltimore and Ohio Railroad.
- Woodstock**; post village in Howard County on the Baltimore and Ohio Railroad.
- Woodville**; village in Frederick County on the Washington, Potomac and Chesapeake Railroad.
- Woodwardville**; post village in Anne Arundel County.
- Woodyard**; village in Prince George County.
- Woolford**; creek, a small tributary of Little Choptank River in Dorchester County.
- Woolford**; neck, a strip of land lying between Woolford Creek and Madison Bay in Dorchester County.
- Woolford**; post village in Dorchester County.
- Worcester**; county, organized in 1742, occupies the extreme southeast corner of the State, and comprises the whole of the Maryland ocean front. It is bounded on the north by Wicomico County and the State of Delaware, east by the ocean, and south by the ocean and Virginia, and west by Pocomoke River. The surface of the county is low and level, in some places rising only 5 feet above the sea. The Atlantic coast is bordered by sand bars separated from the mainland by lagoons known as Assawoman and Sinexuent bays, having marshy shores. The area is 487 square miles, of which more than a third, or 132,549 acres, was under cultivation in 1900. The population for the same year was 20,865. The county seat is Snow Hill, with a population of 1,576. Other towns are Pocomoke and Berlin, with populations of 2,248 and 1,246, respectively. The average magnetic declination in the county in 1900 was 5° 05'. The rainfall commonly ranges between 45 and 50 inches, and the mean annual temperature, between 45° and 50°.
- Worlds End**; creek, a small tributary of Charles Creek in Dorchester County.
- Worton**; creek, a small tributary to Chesapeake Bay in Kent County.
- Worton**; point in Kent County, projecting into Chesapeake Bay.
- Worton**; post village in Kent County on the Philadelphia, Baltimore and Washington Railroad.
- Wrights**; branch, a small tributary of Nanticoke River in Dorchester County.
- Wrights**; post village in Dorchester County.
- Wrights**; run, a small tributary of Georges Creek in Allegany County.
- Wroten**; small, almost entirely marshy island in Honga River in Dorchester County.
- Wroths**; point in Cecil County, projecting into Elk River.
- Wye**; landing on Wye River in Talbot County.
- Wye**; landing on Wye River in Queen Anne County.
- Wye Mills**; village in Talbot County.
- Wye**; narrows, a passage connecting Back and Front Wye rivers in Queen Anne County.
- Wye**; river, a tributary to Eastern Bay in Queen Anne County.
- Wynne**; post village in St. Mary County.
- Yellow**; branch, a small tributary of Little Gunpowder Falls in Harford County.
- Yellow Springs**; village in Frederick County.
- Yeoho**; village in Baltimore County.

185. Results of spirit leveling, fiscal year 1900-01, by H. M. Wilson, J. H. Renshawe, E. M. Douglas, and R. U. Goode. 1901. 219 pp.
187. Geographic dictionary of Alaska, by Marcus Baker. 1901. 446 pp. (Out of stock.)
190. Gazetteer of Texas, by Henry Gannett. 1902. 162 pp., 8 pls. (Out of stock.)
192. Gazetteer of Cuba, by Henry Gannett. 1902. 113 pp., 8 pls. (Out of stock.)
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201. Results of primary triangulation and primary traverse, fiscal year 1901-02, by H. M. Wilson, J. H. Renshawe, E. M. Douglas, and R. U. Goode. 1902. 164 pp., 1 pl.
214. Geographic tables and formulas, compiled by S. S. Gannett. 1903. 284 pp.
216. Results of primary triangulation and primary traverse, fiscal year 1902-03, by S. S. Gannett. 1903. 222 pp., 1 pl.
224. Gazetteer of Texas (second edition), by Henry Gannett. 1904. 177 pp., 7 pls.
226. Boundaries of the United States and of the several States and Territories, with an outline of the history of all important changes of territory (third edition), by Henry Gannett. 1904. 145 pp., 54 pls.
230. Gazetteer of Delaware, by Henry Gannett. 1904. 15 pp.
231. Gazetteer of Maryland, by Henry Gannett. 1904. 84 pp.

Correspondence should be addressed to

The DIRECTOR,

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WASHINGTON, D. C.

JUNE, 1904.

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**U. S. Dept. of the Interior.**

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A

# GAZETTEER OF VIRGINIA

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



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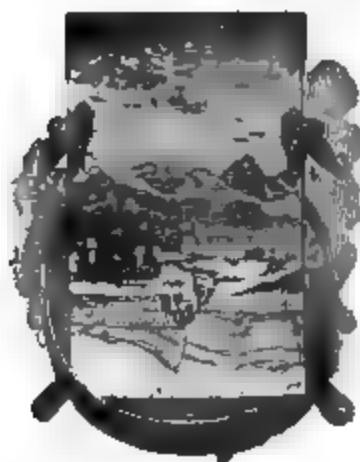
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A

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1904



## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a bulletin, a gazetteer of Virginia.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

HON. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# A GAZETTEER OF VIRGINIA.

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By HENRY GANNETT.

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## GENERAL DESCRIPTION OF THE STATE.

Virginia is one of the easternmost States of the Union. It lies on the Atlantic seaboard between latitudes  $36^{\circ} 30'$  and  $39^{\circ} 30'$  and longitudes  $75^{\circ}$  and  $84^{\circ}$ . Its limits are very irregular, except on the south, and even there the boundary, though nominally a parallel of latitude, is actually by no means such a line.

From the Atlantic Ocean, just above the parallel of  $38^{\circ}$ , the boundary crosses the peninsula known as the Eastern Shore, which separates Chesapeake Bay from the Atlantic, in a direction south of west. Then, after a sinuous course among islands fringing the west coast of this peninsula, it crosses Chesapeake Bay to a point on the south side of the mouth of Potomac River. It follows the south bank of the Potomac at low-water line up to Harpers Ferry, where the river cuts through the Blue Ridge. Here the boundary leaves the river and makes a generally southwest course, with several jogs to the northwest, to a point near the head of the Tug Fork of the Big Sandy. From this point it follows a fairly constant southwest course, most of the way along the summit of Pine Mountain, to Cumberland Gap. Here it turns sharply to the east along a parallel which was originally intended to be  $36^{\circ} 30'$  north latitude. The line in reality, however, is from 2 to 6 minutes north of that parallel. This general eastern course it follows to the Atlantic coast.

Virginia was one of the original thirteen States. It adopted the Constitution on June 25, 1788. As admitted it comprised not only its present area but West Virginia and Kentucky. Kentucky was set off and admitted as an independent State June 1, 1792. During the civil war the counties forming what is now the State of West Virginia were admitted to the Union as an independent State, the admission taking effect June 19, 1863.

In 1791 the State ceded to the General Government a tract of country lying south of the Potomac and forming what is now the county of Alexandria, Va., as a portion of the District of Columbia, but in 1846



Congress re-ceded this area to the State. The gross area of Virginia as at present constituted is 42,450 square miles, of which 40,125 is land area, the remainder consisting of land-locked bays and harbors, Drummond Lake, and rivers.

The topography is varied. Along the coast and extending for a varying distance inland the surface is low, being in few places over 200 feet above tide, and along the immediate coast much of the land is marshy. The rivers in this part of the State have the form of estuaries, are broad, with little current, and all streams of any magnitude are tidal. This region, commonly known as the Coastal Plain, is covered with soft Cretaceous and Tertiary rocks. Within it, in the southeast corner of the State, is the great Dismal Swamp, reaching an elevation nowhere more than 22 feet above mean sea level, and it is an almost impassable jungle of canebrake. In its center and upon its highest ground is Drummond Lake, an area of water 5 square miles in extent, without affluents, but drained by two or three artificial ditches.

The Coastal Plain is terminated on the west by what is called the "fall line." This is in the narrow zone in which the granitic rocks lying to the west pass below tide level. Over this fall line the streams from the Potomac to the south boundary of the State pass in a succession of rapids or falls due to the ledges of hard rock in the stream beds. This line is crossed by the Potomac at Georgetown, by the Rappahannock at Fredericksburg, and by the James at Richmond. The mills at Manchester, opposite Richmond on the James, are run by water power from the rapids at this point.

Above the fall line is what is known as the Piedmont Plateau, a region in the main composed of metamorphic rocks, largely granite and allied rocks. This region is higher than the Coastal Plain, and the relief increases westward. The gorges of the streams become deeper and occasional short ridges appear, outliers of the Blue Ridge.

The Blue Ridge is the principal eastern range of the Appalachian Mountain system. It is crossed by the Potomac at Harpers Ferry, and from that point it extends southwestward, crossing the south boundary of the State in longitude  $80^{\circ} 50'$ . At Harpers Ferry it has a height of about 1,200 feet, but it increases southwestward, reaching 3,374 feet in Mount Marshall, 4,031 feet in Stonyman, and 4,001 feet in the Peaks of Otter. Farther southwest it has a plateau-like character, with a steep descent to the southeast and a gentle slope to the northwest. It is cut through by several streams, as stated above—by the Potomac at Harpers Ferry, and by the James and the Roanoke.

West of the Blue Ridge lies the Appalachian Valley, whose northern part is drained toward the northeast by the Shenandoah, a branch of the Potomac, farther south by the headwaters of the James and the

Roanoke, by New River, one of the principal sources of the Kanawha, which flows northwestward to the Ohio, and by the various branches of the Holston, which is one of the chief sources of Tennessee River. This valley is composed of many smaller valleys, separated by narrow, sinuous ridges, trending in the general direction of the main valley. These ridges are cut through at frequent intervals by streams, which thus pass from one secondary valley to another.

The highest point in the State is Mount Rogers, on the Blue Ridge, near the southern boundary.

The average elevation of the State above sea level is 950 feet. The areas between different zones of altitude are as follows:

<i>Areas in Virginia at different altitudes.</i>	
	Square miles.
0 to 100 feet.....	9, 700
100 to 500 feet.....	10, 500
500 to 1, 000 feet.....	5, 950
1, 000 to 1, 500 feet.....	4, 700
1, 500 to 2, 000 feet.....	4, 200
2, 000 to 3, 000 feet.....	6, 800
3, 000 to 4, 000 feet.....	600

The principal rivers of the State, after the Potomac, which can scarcely be said to belong to it, although it serves as an important means of communication and drains a considerable area, are the Rappahannock, the James, which is navigable nearly to Richmond, and the Roanoke, which is partly within the State, but is not navigable within its limits. The coast is everywhere low, that facing the Atlantic is sandy, and much of it is bordered by sand bars. The principal ports are Norfolk and Newport News, both with good harbors opening upon the foot of Chesapeake Bay.

Virginia lies within the temperate zone, in the region of the prevailing westerly winds. The mean annual temperature ranges from 50° in the northern and western or mountainous parts to 60° in the Coastal Plain and the Piedmont region. The annual rainfall, which is fairly well distributed through the year, ranges from 40 to 60 inches, most of the Coastal Plain and the Piedmont region having a rainfall between 45 and 50 inches, while in the mountains the precipitation is considerably greater.

Virginia was originally forested over nearly all of its area, but through clearing the land for cultivation and the cutting of timber for various economic purposes the amount of merchantable timber remaining is comparatively small. No estimate of it has, however, been made.

Virginia was one of the first States of the Union to be settled, and at the time of the first census, taken in 1790, it had a population of nearly three-fourths of a million, being at that time the most populous

of all the States. The following table shows the population at each census and the rate of increase:

Population of Virginia at each census since 1790.

Year.	Population.	Increase.
		Per cent.
1790.....	747, 610	.....
1800.....	880, 200	17. 7
1810.....	974, 600	10. 7
1820.....	1, 065, 366	9. 3
1830.....	1, 211, 405	13. 7
1840.....	1, 239, 797	2. 3
1850.....	1, 421, 661	14. 7
1860.....	1, 596, 318	12. 3
1870.....	1, 225, 163	<sup>a</sup> 23. 3
1880.....	1, 512, 565	23. 5
1890.....	1, 655, 980	9. 5
1900.....	1, 854, 184	12

<sup>a</sup> Decrease, due to the loss of West Virginia.

The population is given for the State as it existed at the time of the census—that is, up to 1860 it included West Virginia, while since that time it includes only what is now within its limits. The rate of increase, however, has been computed upon the population which existed within the present limits of the State. In 1900, with a population of 1,854,184, it was the seventeenth State in number of inhabitants. Of the total population, only 14.6 per cent were found in cities having a population of 8,000 or more, and the remaining 85.4 per cent, or about six-sevenths of all the inhabitants, are classed under this definition as rural. This proportion of rural population is much greater than that of the country at large.

There are ten cities in the State each having a population exceeding 8,000. They are as follows:

Population of cities in Virginia having more than 8,000 inhabitants.

Richmond .....	85, 050
Norfolk .....	46, 624
Petersburg.....	21, 810
Roanoke.....	21, 495
Newport News .....	19, 635
Lynchburg .....	18, 891
Portsmouth.....	17, 427
Danville.....	16, 520
Alexandria .....	14, 528
Manchester .....	9, 715

The above cities are independent of county government.

The State is divided into 100 counties. These with their areas and populations will be found in the general alphabetical list following.

In 1900 the population was very nearly equally divided between the sexes, the males constituting 49.9 per cent and the females 50.1 per cent. As to color, the proportions are 64.3 per cent white and 35.6 per cent colored. The colored are practically all negroes, as the number of Chinese, Japanese, and Indians is trifling. The white race increased in the decade between 1890 and 1900 at the rate of 16.9 per cent, while the negroes increased at the rate of only 4 per cent, owing to a movement of the negro population away from the State, probably southward. The population is nearly all of native birth, there being 99 per cent born in the United States and 1 per cent born abroad.

Of the total number of persons 10 years of age or more 22.9 per cent were unable to read, the most of them being negroes. Of the whites 10 years of age and over, only 11.1 per cent were illiterate. Of persons of school age—that is, between 5 and 20 years, 42 per cent attended school.

The total number of persons engaged in gainful occupations was 48.6 per cent of the entire population 10 years of age and over; that is to say, of this class, nearly one-half were engaged in gainful occupations. Of this class of wage-earners 45.3 per cent were engaged in agriculture, 3.2 per cent in professional pursuits, 23.6 per cent in domestic and other personal service, 11.2 per cent in trade and transportation, and 16.7 per cent in manufactures and mining. It thus appears that agriculture is the principal occupation of the people of the State, the number engaged in it being nearly one-half of all the wage-earners, and nearly twice as great as the number engaged in any other pursuit.

Virginia is preeminently an agricultural State, although it has some manufactures of importance. In 1900 the number of farms was 167,886, of which 73.3 per cent, or nearly three-fourths, were occupied by white farmers, while the remainder, 26.7 per cent, were occupied by negroes. As to tenure, 69.3 per cent, or nearly seven-tenths, of the farms in the State were owned by their occupants, 9.9 per cent were rented for a cash rental, and 20.8 per cent were rented for a share of the products. A much larger proportion of the negro farmers were tenants than of the white farmers, and as a rule the negro tenants pay their rent by a share of the product.

The total area of farms was 19,907,883 acres. The average size of farms was 118.6 acres, being considerably less than the average of the United States. The total amount of improved land was 10,094,805 acres, or little more than one-half the total area of farms, and 39.3 per cent of the total area of the State; in other words, about two-fifths of the State was under cultivation.

The value of all farm property was \$323,515,997. This includes the

the value of the lands, buildings, live stock, implements, machinery, etc.—in short, the total farming capital. The average of this per farm was \$1,927. The total value of the products of the farms was \$86,548,545. This is between 26 and 27 per cent of the farming capital.

The following table shows the number of different classes of live stock upon farms in the State:

*Live stock in Virginia.*

Neat cattle .....	825, 512
Horses .....	298, 522
Mules .....	47, 474
Sheep .....	692, 929
Swine .....	946, 443

The following table shows the amount of the principal agricultural products:

*Statistics of agricultural products in Virginia.*

Dairy products.....	dollars..	7, 000, 000
Corn .....	bushels..	1, 910, 000
Wheat .....	do....	927, 266
Oats .....	do....	275, 394
Hay .....	tons..	612, 962
Tobacco .....	pounds..	122, 884, 900

In the product of tobacco this State is exceeded only by Kentucky and North Carolina, and the excess of the product of the latter State over Virginia is but trifling.

As a manufacturing State, Virginia does not take high rank, but with her rich deposits of excellent coking coal and of iron, it is probable that manufacturing will greatly increase in future years. General statistics of the manufacturing industry in 1900 are set forth in the following table:

*Statistics of manufacturing in Virginia.*

Manufacturing capital .....	\$103, 670, 988
Wage-earners.....	number.. 72, 702
Wages.....	\$22, 445, 720
Materials .....	\$74, 851, 757
Products.....	\$132, 172, 910

The above gross product of manufactures was made up in part of the following items:

*Principal classes of manufactures in Virginia in 1900.*

Cars, etc.....	\$6, 277, 279
Flour.....	12, 687, 267
Iron and steel.....	8, 341, 888
Lumber .....	12, 137, 177
Lumber planing mills .....	2, 686, 898
All textiles .....	3, 282, 583
<i>Cotton goods.....</i>	<i>2, 655, 002</i>

<b>Tobacco</b> .....	<b>\$21, 278, 266</b>
<b>Fertilizers</b> .....	<b>3, 415, 850</b>
<b>Foundry and machine-shop products</b> .....	<b>4, 833, 137</b>
<b>Leather</b> .....	<b>4, 716, 920</b>

The above are the leading manufacturing products of the State and include three-fifths of all the manufactures.

In 1902 the State included 3,832 miles of railway, or 9.55 miles for each 100 square miles, and 19.98 miles for each 10,000 inhabitants. The railways of the State are, in the main, included in the five following systems: Southern, Chesapeake and Ohio, Atlantic Coast Line, Norfolk and Western, and Baltimore and Ohio.

The principal mineral products are coal and iron ore, both of which are found chiefly in the southwestern mountainous portion of the State. The coal production in 1901 was 2,725,873 short tons, and the amount of coke produced was 907,130 short tons. In the States of Virginia and West Virginia there were produced in the same year 925,394 long tons of iron ore. The production of Virginia can not be given separately. There were smelted within the State of Virginia in that year 443,662 long tons of pig iron. Besides the above, 4,275 tons of manganese ore were mined.

## GAZETTEER.

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**Aaron**; post village in Carroll County.

**Aaron**; creek, small right-hand branch of Dan River in Halifax County.

**Abbie**; post village in Carroll County.

**Abbott**; post village in Craig County.

**Abbs**; valley in Tazewell County.

**Abbyville**; post village in Mecklenburg County.

**Abell**; post village in Charlotte County.

**Abercorn**; post village in Amelia County.

**Abert**; post village in Bedford County on the Chesapeake and Ohio Railway.

**Abilene**; post village in Charlotte County.

**Abingdon**; county seat of Washington County, on the Norfolk and Western and the Virginia-Carolina railroads. Altitude, 2,057 feet. Population, 1,306.

**Abner Knob**; summit in Montgomery County. Elevation, 2,838 feet.

**Abraham**; post village in Floyd County.

**Abrams**; creek, a small left-hand tributary to North Fork of Holston River, which rises in Washington County.

**Abrams**; creek, a small left-hand tributary of Shenandoah River in Frederick County.

**Abrams Falls**; post village in Washington County.

**Abrams Mount**; summit in Rockingham County.

**Acadia**; village in Lee County.

**Accakeek**; creek, a small right-hand tributary to Potomac River in Stafford County.

**Accomac**; county, situated on the eastern shore of Chesapeake Bay. The surface is low and level, and much of it, especially near the coast on either side, is marshy. It is but little elevated above tide. The area is 478 square miles. Population, 32,570—white, 20,743; negro, 11,825; foreign born, 65. County seat, Accomac. The mean magnetic declination in 1900 was  $4^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the New York, Philadelphia and Norfolk Railroad.

**Accomac**; county seat of Accomac County.

**Accotink**; post village in Fairfax County on the Washington Southern Railroad.

**Accotink**; creek, a small right-hand tributary of Potomac River in Fairfax County.

**Accotink**; bay, an arm of Potomac River in Fairfax County.

**Achilles**; post village in Gloucester County.

**Acorn**; post village in Halifax County.

**Acteon**; post village in Prince Edward County.

**Ada**; post village in Fauquier County.

**Adamsgrove**; post village in Southampton County on the Southern Railway.

**Adams**; peak in South Mountain. Elevation, 2,990.

**Adelphia**; post village in Scott County.

**Aden**; post village in Prince William County.

**Adial**; post village in Nelson County.



**Adlai**; post village in Augusta County.

**Admant**; post village in Lee County.

**Adner**; post village in Gloucester County.

**Adney**; gap in Blue Ridge, Franklin County.

**Adonis**; post village in Halifax County.

**Adria**; post village in Tazewell County.

**Adriance**; post village in Cumberland County.

**Advance Mills**; post village in Albemarle County.

**Adwolf**; village in Smyth County.

**Afton**; post village in Nelson County on the Chesapeake and Ohio Railway.  
Elevation, 1,407 feet.

**Agee**; post village in Nelson County.

**Agnewville**; post village in Prince William County.

**Aguste**; post village in Isle of Wight County.

**Ahala**; post village in Orange County.

**Aid**; post village in Caroline County.

**Aidyl**; post village in Southampton County.

**Aiken**; swamp in Chesterfield County on James River.

**Aily**; post village in Dickenson County.

**Airfield**; post village in Southampton County.

**Airmont**; post village in Loudoun County.

**Airpoint**; post village in Roanoke County.

**Aittlers**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Aivland**; post village in Sussex County.

**Ajax**; post village in Pittsylvania County on the Southern Railway.

**Alanthus**; post village in Culpeper County.

**Albano**; post village in Orange County.

**Albemarle**; county, situated in the central part of the State in the Piedmont region and extends on the west to the summit of the Blue Ridge, there having an altitude in the summits of 3,000 feet. The county is traversed by a number of short ridges parallel to the Blue Ridge. In altitude its surface ranges from 300 to 3,000 feet. The area is 755 square miles. Population, 28,473—white, 18,135; negro, 10,337; foreign born, 214. Court-house located in Charlottesville. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio and the Southern railways.

**Albemarle and Chesapeake**; canal, extending from the mouth of Southern Branch of Elizabeth River to North Landing River in Norfolk County.

**Alberene**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Albin**; post village in Frederick County.

**Albro**; creek, a small right-hand branch of James River in Chesterfield County.

**Alchie**; post village in Halifax County.

**Alcoma**; post village in Buckingham County.

**Alden**; post village in King George County.

**Alderman**; post village in Floyd County.

**Aldie**; post village in Loudoun County.

**Alean**; post village in Franklin County.

**Alexandria**; county, situated in the eastern part of the State along Potomac River, opposite the District of Columbia. It has a rolling surface, ranging from sea level to 400 feet. The chief city within its limits is Alexandria, formerly the county seat, but now independent in government. Area, 32 square miles. Population, 6,430—white, 3,963; negro, 2,467; foreign born, 294. County seat, Fort Myer. The mean magnetic declination in 1900 was 4° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55°.



**Alexandria**; city, independent, with a population of 14,528, on the Baltimore and Ohio, the Chesapeake and Ohio, the Southern, the Washington, Alexandria and Mount Vernon Electric, and the Washington Southern railroads.

**Alex**; run, a small right-hand tributary of James River in Botetourt County.

**Alfonso**; post village in Lancaster County.

**Alfred**; post village in Albemarle County.

**Alfred**; fork, a small right-hand branch of Knox Creek in Buchanan County.

**Algoma**; village in Franklin County.

**Alhambra**; post village in Nelson County.

**Alleghany**; county, situated in the western part of the State in the Appalachian Valley. The surface consists of a close alternation of sandstone ridges and limestone valleys. It is drained by numerous small streams of James River. Area, 452 square miles. Population, 16,320—white, 12,315; negro, 4,013; foreign born, 168. County seat, Covington. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Alleghany**; tunnel in Alleghany Mountains on the State line in Greenbrier and Alleghany counties. Altitude, 2,068 feet.

**Alleghany Spring**; post village in Montgomery County.

**Alleghany Station**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 2,056 feet.

**Allegheny Front**; the eastern escarpment of the Allegheny Plateau, traversing Virginia, West Virginia, Maryland, and Pennsylvania. Elevation in Virginia ranges from 2,000 to 4,000 feet.

**Allen**; creek, a small left-hand branch of James River in Amherst and Nelson counties.

**Allen**; mountains in Greene County. Elevation, 1,000 to 1,500 feet.

**Allenscreek**; post village in Amherst County on the Chesapeake and Ohio Railway.

**Allenslevel**; post village in Buckingham County.

**Alley**; post village in Scott County.

**Alliance**; post village in Surry County.

**Allisonia**; post village in Pulaski County on the Norfolk and Western Railway.

**Allmondsville**; post village in Gloucester County.

**Allwood**; post village in Amherst County.

**Alma**; post village in Page County.

**Almagro**; post village in Pittsylvania County.

**Almond**; village in Rockingham County.

**Alone**; post village in Rockbridge County.

**Alonzaville**; post village in Shenandoah County.

**Alpha**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Alphin**; post village in Rockbridge County.

**Alrich**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.

**Althea**; post village in Campbell County.

**Alto**; post village in Amherst County.

**Alton**; post village in Halifax County on the Southern Railway.

**Altoona**; mines in Pulaski County.

**Alumine**; post village in Franklin County on the Norfolk and Western Railway. Altitude, 881 feet.

**Alumridge**; post village in Floyd County.

**Alum**; springs in Rockbridge County.

**Alumwells**; post village in Washington County.

**Alvah**; post village in Henry County.

**Alvarado**; post village in Washington County.

**Amaryllis**; post village in Louisa County.

**Ambar**; post village in King George County.

**Amburg**; post village in Middlesex County.

**Amelia**; county, situated in the central part of the State in the Piedmont region.

It has an undulating surface, ranging in altitude from 300 to 500 feet. Area, 355 square miles. Population, 9,037—white, 3,052; negro, 5,985; foreign born, 50. County seat, Amelia. The mean magnetic declination in 1900 was  $3^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern Railway.

**Amelia**; county seat of Amelia County on the Southern Railway. Altitude, 361 feet.

**Amherst**; county, situated in the central part of the State in the Piedmont region, its western boundary being the summit of the Blue Ridge. Its surface is somewhat broken by short ridges and isolated summits, outliers of the Blue Ridge. It is drained by James River. The altitude ranges from 500 feet up to 3,000 in the summits of the Blue Ridge. Area, 464 square miles. Population, 17,864—white, 10,807; negro, 7,057; foreign born, 70. County seat, Amherst. The mean magnetic declination in 1900 was  $3^{\circ} 10'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $50^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern and the Chesapeake and Ohio railways.

**Amherst**; county seat of Amherst County on the Southern Railway. Altitude, 629 feet.

**Amicus**; post village in Greene County.

**Amissville**; post village in Rappahannock County.

**Ammon**; post village in Amelia County.

**Amos**; creek, a small tributary to Copper Creek in Scott County.

**Amos**; post village in Floyd County.

**Amsterdam**; post village in Botetourt County.

**Amy**; post village in Amherst County.

**Ancella**; post village in Grayson County.

**Anchor**; post village in Surry County.

**Anderson**; post village in Augusta County on the Big Stony Railway.

**Andersonville**; post village in Buckingham County.

**Andrews**; post village in Spottsylvania County.

**Angels Rest**; mountain in Giles County. Elevation, 3,600 feet.

**Angola**; creek, a small left-hand branch of Appomattox River in Cumberland County.

**Angola**; post village in Cumberland County.

**Ann**; post village in Lee County.

**Annandale**; post village in Fairfax County.

**Annex**; post village in Augusta County.

**Anstelle**; post village in Botetourt County.

**Ante**; post village in Brunswick County.

**Antelope**, post village in Rockingham County.

**Anthony Knobs**; summits in Botetourt County. Elevation, 1,500 to 2,500 feet.

**Anthony Mill**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Anthony**; ferry over Roanoke River in Pittsylvania County.

**Anthony**; ford in Roanoke River in Franklin County.

**Antioch**; post village in Fluvanna County on Farmville and Powhatan Railroad. Altitude, 487 feet.

**Antlers**; post village in Mecklenburg County.

**Appalachia**; post village in Wise County on the Interstate and the Louisville and Nashville railroads.

**Appleberry**; mountains in Albemarle County. Elevation, 1,000 to 1,500 feet.

**Applegrove**; post village in Louisa County.

**Apple Orchard**; summits in Botetourt County.

**Appold**; post village in Botetourt County.

**Appomattox**; county, situated in the southern part of the State in the Piedmont region. It has an undulating surface, with an altitude ranging from 400 to 800 feet. It is drained by James and Roanoke rivers; area, 342 square miles. Population, 9,662—white, 5,731; negro, 3,931; foreign born, 15. County seat, West Appomattox. The mean magnetic declination in 1900 was  $2^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Appomattox**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 825 feet.

**Appomattox**; river which heads in the Piedmont region and flows in a sinuous eastward course to its junction with the James. Length, 130 miles; navigable to Petersburg.

**Aqua**; post village in Rockbridge County.

**Aquia**; creek, a small right-hand branch of Potomac River in Stafford County.

**Aral**; post village in Carroll County.

**Ararat**; post village in Patrick County.

**Ararat**; river, a left-hand branch of Yadkin River, rising in Patrick County.

**Arborhill**; post village in Augusta County.

**Arbutus**; post village in Grayson County.

**Arcanum**; post village in Buckingham County.

**Archer Knob**; summit in North Mountain.

**Archie**; post village in Culpeper County.

**Arch Mills**; post village in Botetourt County.

**Arco**; post village in Warren County.

**Arcola**; post village in Loudoun County.

**Arcturus**; village in Fairfax County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Ark**; post village in Gloucester County.

**Arkton**; village in Rockingham County.

**Arlington**; post village in Alexandria County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Armel**; post village in Frederick County.

**Armstrong**; post village in Bath County.

**Arnold**; creek, a small right-hand branch of James River in Rockbridge County.

**Arnold**; valley in the southern part of Rockbridge County.

**Arringdale**; post village in Southampton County on the Southern Railway.

**Arrington**; post village in Nelson County on the Southern Railway. Altitude, 692 feet.

**Arritts**; post village in Alleghany County.

**Arthur**; marshy creek tributary to Rowanty Creek, a swamp in Dinwiddie County.

**Artrip**; post village in Russell County on the Norfolk and Western Railway. Altitude, 1,560 feet.

**Arvonias**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Asberrys**; post village in Tazewell County.

**Ashburn**; post village in Loudoun County.

**Ashby**; gap in the Blue Ridge in Clarke County.

**Ashby**; post village in Cumberland County on the Norfolk and Western Railway. Altitude, 597 feet.

**Ashcake**; post village in Hanover County on the Chesapeake and Ohio Railway. Altitude, 199 feet.

**Ash Camp**; creek, a small left-hand tributary to Roanoke River in Charlotte County.

**Ashgrove**; post village in Fairfax County.

**Ash Hollow**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Ashland**; town in Hanover County on the Richmond, Fredericksburg and Potomac Railroad. Population, 1,147. Altitude, 221 feet.

**Ashton**; creek, a small right-hand tributary to James River in Chesterfield County.

**Aspenview**; post village in Brunswick County.

**Aspenwall**; post village in Charlotte County.

**Assamoosick**; creek, a left-hand branch of Nottoway River in southeast Virginia.

**Assamoosick**; post village in Southampton County.

**Assawoman**; post village in Accomac County.

**Athlone**; village in Rockingham County.

**Athos**; post village in Orange County.

**Atkins**; post village in Smyth County on the Norfolk and Western Railway. Altitude, 2,279 feet.

**Atlantic**; post village in Accomac County.

**Atlas**; post village in Pittsylvania County.

**Atlee**; post village in Hanover County on the Chesapeake and Ohio Railway. Altitude, 202 feet.

**Atoka**; post village in Fauquier County.

**Attoway**; post village in Smyth County.

**Auburn**; post village in Fauquier County.

**Auburn Mills**; post village in Hanover County.

**Augusta**; county, situated in the western part of the State in the Appalachian Valley, its eastern boundary being the summit of the Blue Ridge; its surface is undulating and but little broken. It is drained mainly northward into branches of Shenandoah River. The altitude ranges from 1,200 to 4,500 feet in Elliott Knob. Area, 1,012 square miles. Population, 32,370—whites, 26,670; negro, 5,700; foreign born, 107. County seat, Staunton. The mean magnetic declination in 1900 was  $2^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature 50 to  $55^{\circ}$ . The county is traversed by the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western railroads.

**Augusta Springs**; post village in Augusta County on the Chesapeake and Ohio Railway.

**Augusta White Sulphur**; springs in Augusta County.

**Austin**; creek, a small right-hand tributary to James River in Buckingham County.

**Austin**; run, a small right-hand tributary to Potomac River in Stafford County.

**Austinville**; post village in Wythe County on the Norfolk and Western Railway.

**Autumn**; post village in Scott County.

**Avalon**; post village in Northumberland County.

**Averett**; post village in Mecklenburg County.

**Avis**; post village in Augusta County.

**Avon**; post village in Nelson County.

**Axtell**; post village in Buckingham County on the Danville and Western Railway.

**Axon**; post village in Henry County on the Danville and Western Railway. Altitude, 1,020 feet.

**Ayers**; post village in Scott County.

**Aylett**; post village in King William County.

**Aylmer**; post village in Nelson County.

**Azen**; post village in Washington County.

**Bachelors Hall**; post village in Pittsylvania County.

**Back**; bay, a lagoon on the southeast coast, separated from the Atlantic Ocean by a sand bar.

- Back**; creek, a small left-hand tributary to Goose Creek in Campbell County.
- Back**; creek, a small right-hand branch of Jackson River in Highland County.
- Back**; creek, a left-hand tributary of James River in Bath and Highland counties.
- Back**; creek, a small left-hand tributary to James River in Rockbridge County.
- Back**; creek, a small right-hand tributary to James River in Botetourt County.
- Back**; creek, a small right-hand branch of Potomac River in Frederick County, Va., and Berkeley County, W. Va.
- Back**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Back**; creek, a right-hand branch of Roanoke River in Roanoke County.
- Back**; creek, a small left-hand tributary to Shenandoah River in Augusta County.
- Back**; creek, a small right-hand tributary to Shenandoah River in Augusta County.
- Back**; run, a small left-hand branch of James River in Rockbridge County.
- Backbay**: post village in Princess Anne County on the Norfolk and Southern Railroad.
- Backbone**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,670 feet.
- Back Creek**; mountains in Botetourt County. Elevation, 2,000 feet.
- Back Creek**; mountains in Highland and Bath counties. Elevation, 2,000 to 4,000 feet.
- Bacon**; post village in James City County.
- Bacons Castle**; post village in Surry County.
- Baffle**; post village in Southampton County.
- Bagby**; post village in Caroline County.
- Bagleys Mills**; post village in Lunenburg County.
- Bailey**; creek, a small left-hand branch of James River in Henrico County.
- Bailey**; creek, a small right-hand tributary to James River in Prince George County.
- Bailey**; post village in Tazewell County on the Chesapeake and Ohio Railway. Altitude, 2,600 feet.
- Bailey**; mountain in Nelson County.
- Bailey Crossroads**; post village in Fairfax County.
- Baileyville**; post village in Charlotte County.
- Baker**; creek, a small left-hand tributary to Shenandoah River in Augusta County.
- Baker**; mountain in Prince Edward County.
- Baker Mines**; post village in Carroll County.
- Bakers Mill**; village in Rockingham County.
- Balcony Falls**; post village in Rockbridge County on the Chesapeake and Ohio Railway. Altitude, 712 feet.
- Bald**; mountain in Craig County. Elevation, 1,500 to 2,500 feet.
- Bald**; mountain ridge in Augusta County. Elevation, 3,000 to 4,000 feet.
- Bald Knob**; summit in Amherst County.
- Bald Knob**; summit in Appomattox County.
- Bald Knob**; summit in Augusta County. Elevation, 4,410 feet.
- Bald Knob**; summit in Franklin County. Elevation, 1,421 feet.
- Bald Knob**; summit in Salt Pond Mountain in Giles County. Elevation, 4,348 feet.
- Bald Knob**; summit in Warm Spring Mountain. Elevation, 4,245 feet.
- Baldwin**; ridge in Fauquier County. Elevation, 500 feet.
- Baldwin Station**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 970 feet.
- Bales**; post village in Lee County.
- Balham**; post village in Goochland County.
- Ball**; mountain in Nelson County.
- Ballard**; post village in Patrick County.
- Ballinger**; creek, a small left-hand tributary to James River in Fluvanna County.

- Ballinger**; creek, a small left-hand branch of James River in Albemarle County.
- Ball Room**; mountain in Nelson County.
- Ballston**; post village in Alexandria County.
- Ballsville**; post village in Powhatan County on the Farmville and Powhatan Railroad. Altitude, 397 feet.
- Balty**; post village in Caroline County.
- Banco**; post village in Madison County.
- Bandana**; post village in Hanover County.
- Bandy**; post village in Tazewell County.
- Bane**; post village in Giles County.
- Banister**; left-hand branch of Dan River in Pittsylvania and Halifax counties.
- Banister**; post village in Pittsylvania County on the Norfolk and Western Railway. Altitude, 364 feet.
- Banks**; mountain in Madison County.
- Banks**; post village in Essex County.
- Banks Mountain**; summit in Amherst County. Elevation, 2,000 feet.
- Banner**; post village in Wise County.
- Baptist**; valley in Tazewell County.
- Baptist Valley**; post village in Tazewell County.
- Barb**; post village in Shenandoah County.
- Barbers**; creek, a small right-hand tributary to Jackson River in Craig County.
- Barbett**; creek, a small right-hand tributary to New River in Carroll County.
- Barbett Knob**; summit in Carroll County. Elevation, 3,034 feet.
- Barboursville**; post village in Orange County on the Southern Railway.
- Barcroft**; post village in Alexandria County on the Southern Railway.
- Barden**; run, a small right-hand tributary to James River in Botetourt County.
- Bare**; mountain, summit in Augusta County.
- Barhamsville**; post village in New Kent County.
- Bark Camp**; small right-hand branch of New River in Pulaski County.
- Barker Mill**; pond in Hanover County on Elder Creek.
- Barley**; post village in Greenesville County.
- Barlow**; village in Lee County.
- Barnesville**; post village in Charlotte County.
- Barnett**; village in Russell County.
- Barnhardt**; creek, a small right-hand branch of Roanoke River in Roanoke County.
- Barque**; post village in Campbell County.
- Barrel**; point of land in Isle of Wight County, extending into James River.
- Barrenridge**; post village in Augusta County.
- Barren Springs**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 1,908 feet.
- Barrmoor**; post village in Smyth County.
- Barrows Mill**; village in Henry County.
- Barrows Store**; post village in Brunswick County.
- Bartee**; post village in Norfolk County.
- Barterbrook**; post village in Augusta County.
- Barton Heights**; town in Henrico County. Population, 763.
- Basham**; post village in Floyd County.
- Basic City**; town in Augusta County on the Chesapeake and Ohio and the Norfolk and Western railways. Population, 1,270.
- Baskerville**; post village in Mecklenburg County on the Southern Railway.
- Bass**; creek, a small left-hand branch of Appomattox River in Chesterfield County.
- Basses**; post village in Halifax County.
- Bassetts**; post village in Henry County on the Norfolk and Western Railway. Altitude, 740 feet.

**Bassil**; post village in Patrick County.

**Bateman**; post village in Patrick County.

**Batesville**; post village in Albemarle County.

**Bath**; county, situated in the western part of the State in the Appalachian Valley.

Its surface consists of an alternation of sandstone ridges and limestone valleys. It is drained by branches of James River. The altitude ranges from 1,100 up to 4,000 feet. Area, 548 square miles. Population, 5,595—white, 4,589; negro, 1,006; foreign born, 66. County seat, Warm Springs. The mean magnetic declination in 1900 was 2° 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio Railway.

**Batna**; post village in Culpeper County.

**Batt**; post village in Gloucester County.

**Batten**; post village in Isle of Wight County.

**Battersea**; canal in Dinwiddie County extending along Appomattox River.

**Battery**; post village in Essex County.

**Battery**; creek, a small right-hand branch of James River in Bedford County.

**Batterypark**; post village in Isle of Wight County.

**Battle**; run, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Battle**; mountains in Rappahannock County. Elevation, 1,000 feet.

**Battlehill**; post village in Roanoke County.

**Bay**; post village in Floyd County.

**Bayard**; post village in Warren County.

**Bayford**; post village in Northampton County.

**Baylor**; post village in Grayson County.

**Baynesville**; post village in Westmoreland County.

**Bayon**; post village in Halifax County.

**Bayport**; post village in Middlesex County.

**Bays Mill**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Bayview**; post village in Northampton County.

**Baywood**; post village in Grayson County.

**Beach**; post village in Chesterfield County on the Farmville and Powhatan Railroad. Altitude, 283 feet.

**Beachem**; run, a small right-hand tributary to Chickahominy River in Henrico County.

**Beachland**; post village in Surry County.

**Beacon Quarter**; branch, a small left-hand tributary to James River in Henrico County.

**Beagle**; gap in the Blue Ridge in Augusta County.

**Beahm**; post village in Page County.

**Bealeton**; post village in Fauquier County on the Southern Railway. Altitude, 290 feet.

**Beamer Knob**; summit in Carroll County. Elevation, 3,400 feet.

**Beamon**; post village in Nansemond County on the Southern Railway.

**Bean**; branch, a small right-hand tributary to Potomac River in Fauquier County.

**Bear**; creek, a small left-hand tributary to Guest River in Wise County.

**Bear**; creek, a small right-hand branch of Middle Fork of Holston River in Smyth County.

**Bear**; creek, a small left-hand tributary to Roanoke River in Campbell County.

**Bear**; mountain in Amherst County. Elevation, 1,500 feet.

**Bear**; mountain in Augusta County. Elevation, 2,500 feet.

**Bear**; mountain in Highland County.



**Beard**; mountains in Bath County. Elevation, 1,500 to 2,500 feet.

**Bear Garden**; creek, a small right-hand branch of James River in Buckingham County.

**Bear Garden**; run, a small right-hand tributary to Potomac River in Frederick County.

**Bear Lithia**; post village in Rockingham County.

**Bear Pen**; small left-hand branch of Pigeon Creek in Wise County.

**Beartown**; mountain in Russell County. Elevation, 4,710 feet.

**Bearwallow**; mountain in Buchanan County. Altitude, 3,170 feet.

**Bearwallow**; post village in Buchanan County.

**Bear Wallow**; run, a small right-hand tributary to James River in Botetourt County.

**Beauford**; post village in Floyd County.

**Beautiful**; run, a small left-hand tributary to Rapidan River in Madison County.

**Beaver**; branch, a small right-hand tributary to New River in Grayson County.

**Beaver**; small right-hand branch of Cripple Creek in Wythe County.

**Beaver**; creek, a left-hand tributary to Dan River in Henry County.

**Beaver**; creek, a small left-hand tributary to James River in Amherst County.

**Beaver**; creek, a small right-hand branch of James River in Campbell County.

**Beaver**; creek, a small right-hand tributary to New River in Grayson and Carroll counties.

**Beaver**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Beaver**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.

**Beaver**; fork, a small tributary to Botetourt River in Tazewell County.

**Beaverdam**; post village in Hanover County on the Chesapeake and Ohio Railway. Altitude, 282 feet.

**Beaverdam**; creek, a small right-hand tributary to Potomac River in Loudoun County.

**Beaverdam**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Beaverdam**; creek, a small left-hand branch of James River in Goochland County.

**Beaverdam**; creek, a small left-hand tributary to James River in Louisa County.

**Beaverdam**; creek, a small right-hand tributary to New River in Carroll County.

**Beaverdam**; creek, a small right-hand tributary to New River in Floyd County.

**Beaverdam**; creek, a small left-hand tributary to New River in Wythe County.

**Beaverdam**; creek, a small left-hand tributary to Powell River in Wise County.

**Beaverdam**; creek, a small left-hand branch of Roanoke River in Bedford County.

**Beaverdam**; creek, a small left-hand tributary to South Fork of Holston River in Washington County.

**Beaverdam**; creek, a small left-hand tributary to York River in Hanover County.

**Beaverdam Mills**; post village in Hanover County.

**Beaverpond**; branch, a small left-hand tributary to Roanoke River in Campbell County.

**Beaverpond**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.

**Beaverpond**; creek, a small right-hand tributary to Appomattox River in Amelia County.

**Beaverpond**; post village in Amelia County.

**Beazley**; ford across Ducker Creek in Buckingham County.

**Beazley**; post village in Essex County.

**Beck**; post village in Prince Edward County.

**Beckham**; post village in Appomattox County.

**Beckner**; gap in Catawba Mountains, caused by Mason Creek, in Roanoke County.



**Beck Ridge**; mountains extending from Washington County, Va., into Sullivan County, Tenn.

**Becky**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Bedford**; county, situated in the southern part of the State in the upper part of the Piedmont region, and consisting of a rolling and somewhat broken country, with numerous short ridges, which are outliers of the Blue Ridge, in the upper part of the county. It is drained by Roanoke River and its tributaries. The altitude ranges from 600 up to 4,000 feet in the Peaks of Otter, which forms the northwestern limit of the county. Area, 729 square miles. Population, 30,356—white, 20,617; negro, 9,739; foreign born, 71. County seat, Bedford City. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 50 to 60 inches, and the temperature 55° to 60°. The county is traversed by the Norfolk and Western Railway.

**Bedford City**; county seat of Bedford County on the Norfolk and Western Railway. Population, 2,416.

**Bedford Springs**; post village in Campbell County.

**Bee**; small right-hand branch of Slate Creek in Buchanan County.

**Bee**; post village in Dickenson County.

**Beech**; creek, a small left-hand tributary to Dry Fork, rising in Tazewell County.

**Beech Lick Knob**; summit in Rockingham County. Elevation, 3,000 feet.

**Beechnut**; post village in Mecklenburg County.

**Beechspring**; village in Lee County.

**Beechtree**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.

**Beesville**; post village in Buckingham County.

**Behams**; gap in the Blue Ridge in Rappahannock County.

**Belamar**; post village in Hanover County.

**Beldor**; post village in Rockingham County.

**Belfast Mills**; post village in Russell County.

**Belfield**; post village in Greenesville County.

**Belgrade**; post village in Shenandoah County.

**Belinda**; post village in Accomac County.

**Bell**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Bellamy**; post village in Scott County.

**Bellbranch**; post village in Buckingham County.

**Belle**; small island in James River in Henrico County.

**Belle Coe**; creek, a small left-hand tributary to James River in Rockbridge County.

**Belle Hampton**; post village in Pulaski County.

**Bellehaven**; town in Accomac County. Population, 331.

**Bellevue**; post village in Bedford County on the Norfolk and Western Railway. Altitude, 848 feet.

**Bellfair Mills**; post village in Stafford County.

**Bells**; post village in Bedford County.

**Bells Crossroads**; post village in Louisa County.

**Bells Valley**; post village in Rockbridge County on the Chesapeake and Ohio Railway. Altitude, 1,507 feet.

**Belmont**; bay, an arm of Potomac River extending into Prince William and Fairfax counties.

**Belmont**; post village in Spottsylvania County.

**Belona**; post village in Powhatan County on the Farmville and Powhatan Railroad. Altitude, 368 feet.

**Belroi**; post village in Gloucester County.

**Belsches**; post village in Sussex County.

**Ben;** post village in Alleghany County.

**Bena;** post village in Gloucester County.

**Benbow;** post village in Tazewell County.

**Bend;** ford across Roanoke River in Roanoke County.

**Bend;** post village in Louisa County.

**Benges;** small right-hand branch of Powell River in Wise County.

**Benges;** gap in Little Stone Mountain made by Benges Branch.

**Benhams;** post village in Washington County on the Virginia and Southwestern Railway.

**Benhur;** post village in Lee County on the Louisville and Nashville Railroad.

**Bennettcreek;** post village in Nansemond County.

**Bennetts Mill;** post village in Montgomery County.

**Benns Church;** post village in Isle of Wight County.

**Bens;** branch, a small right-hand tributary to Jackson River in Alleghany County.

**Bensons;** run, a small left-hand tributary to James River in Highland County.

**Bent;** creek, a small right-hand branch of Appomattox River in Amelia County.

**Bent;** creek, a small right-hand branch of James River in Appomattox County.

**Bent;** mountain in Floyd County.

**Bent;** mountains in Roanoke County.

**Bentcreek;** post village in Appomattox County.

**Bentley;** branch, a small left-hand tributary to New River in Pulaski County.

**Bent Mountain;** post village in Roanoke County.

**Bentonville;** post village in Warren County on the Norfolk and Western Railway. Altitude, 729 feet.

**Berea;** post village in Stafford County.

**Berkeley;** town in Norfolk County on the Norfolk and Southern Railroad. Population, 4,988.

**Berlin;** post village in Southampton County.

**Bermuda Hundred;** post village in Chesterfield County.

**Bernard;** creek, a small right-hand branch of James River in Powhatan County.

**Berringer;** mountain in Montgomery County.

**Berry;** creek, a small right-hand tributary to New River in Floyd County.

**Berryman;** post village in Surry County.

**Berrys;** post village in Clarke County.

**Berryville;** town and county seat of Clarke County on the Norfolk and Western Railway. Altitude, 968 feet. Population, 938.

**Bertha;** post village in Wythe County on the Norfolk and Western Railway.

**Berthaville;** post village in King George County.

**Berton;** post village in Giles County on the Norfolk and Western Railway. Altitude, 1,655 feet.

**Bess;** post village in Alleghany County.

**Bessemer;** post village in Botetourt County on the Chesapeake and Ohio Railway.

**Bestland;** post village in Essex County.

**Bethel Academy;** post village in Fauquier County.

**Betsey;** branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Botsey Bell;** summit in Augusta County. Elevation, 1,500 feet.

**Betty;** creek, a small right-hand branch of Roanoke River in Franklin County.

**Beulahville;** post village in King William County.

**Beverly;** post village in Pittsylvania County.

**Bevi;** creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Bevila;** bridge across Appomattox River from Chesterfield into Amelia County.

**Bibb;** post village in Louisa County on the Norfolk and Western Railway.

**Bible;** run, a small right-hand tributary to Shenandoah River in Rockingham County.

**Bickley Mill**; post village in Russell County.

**Big**; branch, a small right-hand tributary to Jackson River in Craig County.

**Big**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Big**; small right-hand branch of New River in Carroll County.

**Big**; branch, a small right-hand tributary to North Fork of Holston River, rising in Scott County.

**Big**; small right-hand branch of Clinch River rising in Russell County.

**Big**; creek, a small right-hand tributary to Clinch River in Tazewell County.

**Big**; island on James River in Amherst County.

**Big**; run, a small right-hand tributary to New River in Floyd County.

**Big**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Big**; tunnel, in Montgomery County on the Norfolk and Western Railway.

**Big Bundy**; creek, a small right-hand tributary to North Fork of Powell River.

**Big Cedar**; creek, a left-hand branch of Clinch River, rising in Russell County.

**Big Cobbler**; mountains in Fauquier County. Elevation, 1,000 to 1,500 feet.

**Big Cranberry**; creek, a small right-hand tributary to New River in Carroll County.

**Bigcreek**; post village in Tazewell County.

**Bigcut**; post village in Scott County.

**Big Fork Ridge**; mountains in Buchanan County. Elevation, 2,500 feet.

**Big Fox**; creek, a small right-hand tributary to Russell Fork, rising in Buchanan County.

**Biggs**; mountain in Botetourt and Rockbridge counties.

**Biggs**; run, a small right-hand tributary to James River in Botetourt County.

**Bighill**; post village in Lee County on the Chesapeake and Ohio Railway.

**Big Hollow**; small right-hand branch of Levisa Fork in Buchanan County.

**Big Hound**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.

**Big House Mountain**; summit in Rockbridge County. Elevation, 3,612 feet.

**Big Indian**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Big Island**; post village in Bedford County on the Chesapeake and Ohio Railway. Altitude, 596 feet.

**Big Laurel**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Big Levels**; summits in the Blue Ridge in Augusta County.

**Big Lick Draft**; small right-hand tributary to Jackson River in Bath County.

**Big Licking**; creek, a small left-hand branch of James River in Goochland County.

**Big Moccasin**; creek, a left-hand tributary to Clinch River, rising in Russell County.

**Big Moccasin**; creek, a small right-hand branch of North Fork of Holston River in Scott County.

**Big Nottoway**; river, a head branch of Nottoway River, rising in Lunenburg County and forming the boundary between Nottoway and Lunenburg counties.

**Big Otter**; creek, a left-hand branch of Roanoke River, formed by North and South forks, in Bedford County.

**Big Piney**; mountains in Amherst County. Elevation, 1,000 to 2,000 feet.

**Big Prator**; creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.

**Big Reed Island**; creek, a right-hand branch of New River in Carroll County.

**Big Ridge**; mountain in Bland County. Elevation, 3,000 to 4,000 feet.

**Big Ridge**; mountains in Augusta County.

**Big Ridge**; mountains in Scott County.

**Bigriver**; post village in Augusta County.

**Bigrock**; post village in Buchanan County.

- Big Shuffle**; branch, a small left-hand tributary to New River in Pulaski County.
- Big Spring**; small right-hand branch of Walker Creek in Giles County.
- Big Spy**; summit in the Blue Ridge in Augusta County.
- Big Stone**; gap in Little Stone Mountain, made by Powell River, in Wise County.
- Bigstone Gap**; town in Wise County on the Louisville and Nashville and the Virginia and Southwestern railroads. Altitude, 1,966 feet. Population, 1,617.
- Big Stone Ridge**; mountains in Tazewell County.
- Big Tom**; creek, a small right-hand tributary to Clinch River, rising in Wise County.
- Big Town Hill**; creek, a small right-hand branch of Clinch River in Tazewell County.
- Bigtunnel**; post village in Montgomery County.
- Bill Young**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Bill Young**; gap in Keen Mountain in Buchanan County.
- Binfords**; post village in Brunswick County.
- Binns Hall**; post village in Charles City County.
- Birch**; post village in Halifax County.
- Birchen**; creek, a small left-hand tributary to Nottoway River in Nottoway County.
- Birchleaf**; post village in Dickenson County.
- Birds**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Birdsneest**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.
- Birdsong**; post village in Sussex County.
- Birdwood**; post village in Albemarle County.
- Biscoe**; post village in King and Queen County.
- Bishops**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Black**; creek, a small right-hand tributary to James River in Roanoke County.
- Black**; creek, a small right-hand branch of Powell River in Wise County.
- Blackberry**; village in Henry County.
- Blackey**; fork, a small left-hand fork of Knox Creek in Buchanan County.
- Black Oak**; mountains in Shenandoah County.
- Black Oak Ridge**; mountains in Bath, Rockbridge, and Augusta counties. Elevation, 2,000 feet.
- Blackridge**; post village in Mecklenburg County.
- Blackrock Springs**; post village in Augusta County.
- Blacks**; gap in North Mountains in Botetourt County.
- Blacksburg**; town in Montgomery County. Population, 768. Altitude, 2,170 feet.
- Blackstone**; town in Nottoway County on the Norfolk and Western Railway. Population, 585.
- Blackwalnut**; post village in Halifax County.
- Blackwater**; creek, a small right-hand branch of Clinch River in Lee County, Va., and Hancock County, Tenn.
- Blackwater**; ford across Roanoke River in Roanoke County.
- Blackwater**; post village in Lee County.
- Blackwater**; river, a small left-hand tributary to Staunton River, formed by North and South forks.
- Blackwater**; river, a right-hand branch of Roanoke River in Franklin County.
- Blackwater**; river, a small right-hand branch of North Landing River in Norfolk County.
- Blackwater**; river of southeast Virginia, one of the sources of Chowan River.
- Blackwater**; swamp in Prince George County.
- Blackwells**; post village in Northumberland County.
- Blair**; ferry in New River in Grayson County.
- Blairs**; post village in Prince George County on the Norfolk and Western Railway.

**Blakes**; post village in Mathews County.

**Blanche**; post village in Dickenson County.

**Bland**; county, located in the western part of the State in the Appalachian Valley.

Its surface consists of an alternation of short parallel ridges and valleys. The elevation ranges from 2,000 up to nearly 4,000 feet above sea level. Area, 352 square miles. Population, 5,497—white, 5,285; negro, 212; foreign born, 6. County seat, Bland. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.

**Bland**; county seat of Bland County.

**Bland**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Blankenship**; village in Lee County.

**Blantons**; post village in Caroline County on the Chesapeake and Ohio Railway.

**Bleak**; post village in Fauquier County.

**Blenheim**; post village in Albemarle County.

**Blickville**; post village in Dinwiddie County.

**Bliss**; post village in Frederick County.

**Bloom**; post village in Frederick County on the Southern Railway.

**Bloomer**; post village in Scott County.

**Bloomfield**; post village in Loudoun County.

**Bloomtown**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Blossom Hill**; post village in Princess Anne County.

**Blount**; village in Bedford County.

**Bloxom**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Blue**; run, a small right-hand tributary to Rappahannock River in Orange County.

**Bluegrass**; post village in Russell County.

**Bluemont**; post village in Loudoun County.

**Blue Ridge Springs**; post village in Botetourt County on the Norfolk and Western Railway.

**Bluespring**; creek, a small right-hand tributary to James River in Alleghany County.

**Bluespring**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Bluespring Run**; post village in Alleghany County.

**Bluestone**; post village in Tazewell County on the Norfolk and Western Railway.

**Bluestone**; river, rising in Tazewell County, Va., and flowing northeast into New River in Summers County, W. Va.

**Bluff**; creek, a small left-hand tributary to James River in Amherst County.

**Bluff**; run, a small right-hand tributary to Mattaponi River in Spotsylvania County.

**Bluff City**; post village in Giles County.

**Bluff**; mountain in Amherst County. Elevation, 3,350 feet.

**Bluff Spur**; mountains in Wise County.

**Boards**; mountain in Bedford County. Elevation, 1,515 feet.

**Boatswain**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Boaz**; post village in Nelson County.

**Boaz Mountains**; summits in Albemarle County. Elevation, 1,500 to 2,000 feet.

**Bobs**; post village in Isle of Wight County.

**Bocock**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 782 feet.

**Bodley**; post village in Augusta County.

**Bodycamp**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Bodycamp**; post village in Bedford County.

**Boer**; post village in Lancaster County.

**Boggs**; post village in Accomac County.

**Bohannon**; post village in Mathews County.

**Bolar**; post village in Bath County.

**Bold**; branch, a small left-hand tributary to Roanoke River in Bedford County.

**Bold Knob**; summit in Rockingham County.

**Boler**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.

**Bolington**; post village in Loudoun County.

**Bolling**; post village in Buckingham County.

**Bolt**; post village in Carroll County.

**Bolton**; village in Russell County.

**Bonair**; post village in Chesterfield County on the Southern Railway.

**Bonbrook**; creek, a small right-hand tributary to James River in Cumberland County.

**Bonbrook**; post village in Franklin County.

**Bond**; town in Wise County. Population, 295.

**Boner**; mountain in Warm Spring Mountain, Bath County.

**Bennie**; brook, a small left-hand branch of Shenandoah River in Rockingham County.

**Bonney**; cove in Back Bay in Princess Anne County.

**Bonney**; post village in Princess Anne County.

**Bonsacks**; post village in Roanoke County on the Norfolk and Western Railway.

**Bonton**; post village in Bedford County.

**Bony**; run, a small right-hand branch of South Fork of Roanoke River in Montgomery County.

**Booker**; post village in Sussex County.

**Boone**; run, a small left-hand branch of Shenandoah River in Rockingham County.

**Boone Mill**; post village in Franklin County on the Norfolk and Western Railway. Altitude, 1,113 feet.

**Boonesville**; post village in Albemarle County.

**Boonsboro**; post village in Bedford County.

**Boons Path**; post village in Lee County.

**Booth Knob**; summit in Floyd County.

**Borden**; post village in Shenandoah County.

**Bore Auger**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Borneo**; post village in Greene County.

**Borthwick**; post village in Dinwiddie County.

**Boston**; post village in Culpeper County on the Southern Railway. Altitude, 325 feet.

**Boswell**; post village in Cumberland County on the Chesapeake and Ohio Railway.

**Botetourt**; county, situated in the western part of the State in the Appalachian Valley, its southern boundary being the Blue Ridge. Its surface consists of narrow parallel ridges separated by limestone valleys. It is traversed by James River. The altitude ranges from 800 to 4,000 feet. Area, 548 square miles. Population, 17,161—white, 13,284; negro, 3,877; foreign born, 47. County seat, Fincastle. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Chesapeake and Ohio and the Norfolk and Western railways.

**Botetourt**; post village in Botetourt County.

**Botetourt**; springs in Roanoke County.

**Bottom**; creek, a small right-hand tributary to Roanoke River in Roanoke County.

**Boulevard**; post village in New Kent County.

**Bowden**; post village in Halifax County.

**Bowers**; post village in Southampton County.

**Bowershill**; post village in Norfolk County on the Seaboard Air Line Railway.

**Bowlecamp**; creek, a small left-hand branch of Pond River in Wise County.

**Bowlers Wharf**; post village in Essex County.

**Bowles**; post village in Clarke County.

**Bowling**; post village in Tazewell County on the Baltimore and Ohio Railroad.

**Bowling Green**; county seat of Caroline County. Population, 458.

**Bowling Green Ridge**; mountains in Wythe County. Elevation, 3,000 feet.

**Bowmans**; post village in Shenandoah County on the Southern Railway.

**Boxelder**; post village in Nansemond County.

**Boxwood**; post village in Henry County on the Danville and Western Railway.

**Boyce**; post village in Clarke County on the Norfolk and Western Railway. Altitude, 472 feet.

**Boyd Tavern**; post village in Albermarle County.

**Boydton**; county seat of Mecklenburg County on the Southern Railway. Population, 527.

**Boyers Ferry**; post village in Grayson County.

**Boykins**; town in Southampton County on the Seaboard Air Line Railway. Population, 224.

**Bracey**; post village in Mecklenburg County on the Seaboard Air Line Railway.

**Bracket**; post village in Hanover County.

**Bradley Mill**; bridge across Swift Creek in Chesterfield County.

**Bradleys Store**; post village in Charles City County.

**Bradshaw**; creek, a small left-hand branch of North Fork of Roanoke River in Roanoke and Montgomery counties.

**Bradshaw**; post village in Roanoke county on the Norfolk and Western Railway.

**Brake**; small right-hand branch of Roanoke River in Montgomery County.

**Branchville**; post village in Southampton County on the Seaboard Air Line Railway.

**Brand**; small right-hand branch of Cripple Creek in Wythe County.

**Brand**; post village in Page County on the Chesapeake and Ohio Railway. Altitude, 1,330 feet.

**Brander**; bridge across Swift Creek in Chesterfield County.

**Brandon**; post village in Prince George County.

**Brandy Station**; post village in Culpeper County on the Southern Railway.

**Brandywine**; post village in Caroline County.

**Brattans**; mountains in Rockbridge County. Elevation, 2,000 to 2,500 feet.

**Brays**; post village in Essex County.

**Breeze**; post village in Pittsylvania County.

**Bremo**; creek, a small left-hand branch of James River in Fluvanna County.

**Bremobluff**; post village in Fluvanna County.

**Brents**; point on Potomac River in King George County.

**Brentsville**; post village in Prince William County.

**Brewster**; post village in Russell County.

**Brian**; post village in Louisa County.

**Briar Patch**; mountains in Grayson County. Elevation, 3,000 to 3,650 feet.

**Brickhaven**; post village in Alexandria County.

**Brick Store**; village in Lee County.

**Bridge**; cove in Back Bay in Princess Anne County.

**Bridges**; post village in Gloucester County.

**Bridgetown**; post village in Northampton County.

**Bridgewater**; town in Rockingham County. Population, 384.

**Bridle**; creek, a small right-hand branch of New River in Grayson County.

**Bridlecreek**; post village in Grayson County.



**rierfield**; post village in Bedford County.

**rierhook**; post village in Buckingham County.

**riery**; branch, a small left-hand tributary to Shenandoah River in Rockingham County.

**riery**; creek, a small right-hand branch of Appomattox River in Prince Edward County.

**riery**; post village in Prince Edward County.

**riery**; run, a small left-hand tributary to James River in Albemarle and Fluvanna counties.

**riery Branch**; gap in Narrow Back Mountains, caused by Briery Branch, in Rockingham County.

**riery Branch**; wind gap in Shenandoah Mountains on the State line in Rockingham County, Va., and Pendleton County, W. Va.

**riery Branch Knob**; summit in Shenandoah Mountains on the State line between Virginia and West Virginia.

**riggs**; post village in Clarke County on the Norfolk and Western Railway.

**righton**; post village in Northampton County.

**rights**; post village in Pittsylvania County.

**rightwood**; post village in Madison County.

**rink**; post village in Greenesville County.

**rio**; post village in Carroll County.

**ristersburg**; post village in Fauquier County.

**ristol**; city situated in Washington County, but independent in government; on the Holston Valley, the Norfolk and Western, the Southern, and the Virginia and Southwestern railways. Population, 4,579.

**ristow**; post village in Prince William County on the Southern Railway.

**ritain**; post village in Loudoun County.

**road**; bay near eastern coast in Princess Anne County.

**road**; creek, a small right-hand tributary to James River in Rockbridge County.

**road**; ford in Holston River in Smyth County.

**road**; run, a right-hand branch of Potomac River in Prince William County.

**road**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**road**; run, a small right-hand tributary to Potomac River in Fauquier County.

**road**; run, a small right-hand tributary to James River in Craig County.

**road**; run, a small right-hand branch of Potomac River in Loudoun County.

**roadcreek**; post village in Princess Anne County.

**roaddus**; post village in Nelson County.

**roadford**; post village in Smyth County.

**road Hollow**; creek, a small left-hand branch of Walker Creek in Giles County.

**road Rock**; small right-hand branch of James River in Chesterfield County.

**road Run**; mountains in Craig County. Elevation, 1,500 to 2,000 feet.

**roadrun**; post village in Fauquier County on the Southern Railway.

**roadshoals**; ford across Little River in Montgomery County.

**roadshoals**; post village in Floyd County.

**roadwater**; post village in Northampton County.

**roadway**; town in Rockingham County on the Southern Railway. Population, 400.

**rock**; run, a small right-hand branch of Chickahominy River in Henrico County.

**rockett**; post village in Shenandoah County.

**rockroad**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.

**rocks**; gap in Little North Mountain, caused by the North Fork of Shenandoah River.

**rodnax**; post village in Brunswick County.



**Brokenburg**; post village in Spottsylvania County.

**Bromley**; creek, a small right-hand branch of North Fork of Holston River in Washington County.

**Bronze**; post village in Carroll County.

**Brooke**; post village in Stafford County on the Richmond, Fredericksburg and Potomac Railroad.

**Brookewood**; post village in Augusta County.

**Brookhill**; post village in Henrico County.

**Brookings**; post village in Goochland County.

**Brooklyn**; village in Halifax County.

**Brookneal**; post village in Campbell County on the Norfolk and Western Railway.

**Brooks**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Brooks**; ford in Blackwater River in Franklin County.

**Brookvale**; post village in Lancaster County.

**Brosville**; post village in Pittsylvania County.

**Brothers**; post village in Patrick County.

• **Brow**; post village in Pittsylvania County.

**Brown**; gap in the Blue Ridge in Rockingham County.

**Brown**; mountain ridge in Augusta County.

**Brownallen**; post village in Buckingham County.

**Brown Mountain**; summit in Campbell County.

**Browns**; creek, a small left-hand tributary to James River in Amherst County.

**Browns**; landing on James River in Buckingham County.

**Browns**; mountain in Amherst County. Elevation, 2,000 to 2,500 feet.

**Browns**; peak in Wythe County. Elevation, 3,000 to 3,500 feet.

**Browns Store**; post village in Northumberland County.

**Brownsburg**; post village in Rockbridge County.

**Browns Cove**; post village in Albemarle County.

**Browntown**; post village in Warren County.

**Bruce**; village in Rockingham County on the Atlantic Coast Line Railroad.

**Brucetown**; post village in Frederick County.

**Bruceville**; post village in Lunenburg County.

**Brughs Mill**; post village in Botetourt County.

**Bruington**; post village in King and Queen County.

**Brumley**; creek, a small right-hand branch of North Fork of Holston River, rising in Washington County.

**Brumley Gap**; post village in Washington County.

**Brunswick**; county, situated in the southern part of the State in the eastern edge of the Piedmont region; it has a rolling surface, and is of slight elevation. Area, 529 square miles. Population, 18,217—white, 7,375; negro, 10,842; foreign born, 21. County seat, Lawrenceville. The mean magnetic declination in 1900 was 3° 15' W. The mean annual rainfall is 40 to 50 inches, and the temperature 55 to 60°. The county is traversed by the Southern and the Seaboard Air Line railways.

**Brush**; creek, a small left-hand branch of New River in Carroll County.

**Brush**; creek, a small right-hand branch of Little River in Montgomery County.

**Brush**; creek, a small right-hand branch of New River in Grayson County.

**Brush**; creek, a small right-hand tributary to Potomac River in Frederick County.

**Brush**; post village in Grayson County.

**Brushy**; mountain ridge in the western part of the State with an elevation of 2,000 to 3,000 feet.

**Brushy**; mountain in Rockbridge, Bath, and Alleghany counties. Elevation, 1,500 to 3,500 feet.

**brushy**; mountain in Pittsylvania County. Elevation, 1,000 feet.

**brushy**; mountain in Rockbridge County. Elevation, 2,000 feet.

**brushy**; run, a small right-hand tributary to James River in Botetourt County.

**brushy Hills**; summits in Rockbridge County. Elevation, 1,500 feet.

**brushy Mountain**; summit in Fauquier County. Elevation, 750 to 1,000 feet.

**brutus**; post village in Pittsylvania County.

**bryant**; post village in Nelson County.

**bryant**; ridge in Botetourt County. Elevation, 1,500 to 2,000 feet.

**brydie**; post village in Lunenburg County.

**buchanan**; county, situated in the western part of the State on the Alleghany Plateau, and is deeply dissected. It is drained by Levisa Fork of Big Sandy River. The altitude ranges from 1,000 to 3,700 feet at the summit. Area, 492 square miles. Population, 9,692—white, 9,687; foreign born, 4; and negro, 5. County seat, Grundy. The mean magnetic declination in 1900 was 30'. The mean annual rainfall 50 to 60 inches, and the temperature 50 to 55°.

**buchanan**; town in Botetourt County on the Chesapeake and Ohio and the Norfolk and Western railways. Altitude, 834 feet; population, 716.

**buck**; branch, a small left-hand tributary to Roanoke River in Appomattox County.

**buck**; creek, a small right-hand tributary to James River in Appomattox County.

**buck**; creek, a small left-hand tributary to James River in Nelson County.

**buck**; creek, a small left-hand branch of Powell River in Lee County.

**buck**; creek, a small right-hand tributary to Shenandoah River in Augusta County.

**buck**; mountain in Amherst County.

**buck**; mountain in Augusta County.

**buck**; mountain in Roanoke County. Elevation, 1,992 feet.

**buck**; mountains in Albemarle County. Elevation, 1,000 feet.

**buck**; mountains in Grayson County. Elevation, 4,680 feet.

**buck**; mountains in Rappahannock County. Elevation, 1,000 feet.

**buck**; run, a small left-hand tributary to Rappahannock River in Rappahannock County.

**buckeye**; mountains in Giles County. Elevation, 2,000 to 2,500 feet.

**buckhall**; post village in Prince William County.

**buck Hill**; summit in Highland County,

**buck Hill**; summit in Shenandoah County. Elevation, 1,500 feet.

**buckhorn**; creek, a small right-hand tributary to New River in Carroll County.

**buckhorn**; mountains in Tazewell, Giles, and Bland counties. Elevation 2,500 to 3,500 feet.

**buckhorn**; post village in Nansemond County.

**buckingham**; county, situated in the central part of the State in the Piedmont region on James River, which forms its southern boundary. Its surface is in the most part undulating, rising from 300 feet on James River to 1,500 feet in Spear Mountain, in the western part of the county. Area, 552 square miles. Population, 15,268—white, 7,415; negro, 7,851; foreign born, 65. County seat, Buckingham. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Southern Railway.

**buckingham**; county seat of Buckingham County. Altitude, 550 feet.

**buck Island**; creek, a small left-hand tributary to James River in Albemarle County.

**buckland**; post village in Prince William County.

**buckman**; run, a small right-hand tributary to Jackson River in Highland County.

**buck Mountain**; creek, a small left-hand tributary to James River in Albemarle County.

**buck Mountain**; creek, a small left-hand branch of James River in Nelson County.

**buckners Station**; post village in Louisa County on the Chesapeake and Ohio Railway.

- Buckskin**; creek, a small right-hand tributary to Appomattox River in Amelia County.
- Buckton**; post village in Warren County on the Southern Railway.
- Bucu**; post village in Dickinson County.
- Buddle**; post village in Wythe County.
- Buell**; post village in Norfolk County.
- Buena**; post village in Culpeper County.
- Buenavista**; city in Rockbridge County, but independent in government; population, 2,388; on the Chesapeake and Ohio and the Norfolk and Western railways.
- Buff**; branch, a small right-hand branch of Roanoke River in Franklin County.
- Buffalo**; branch, a small left-hand tributary to Shenandoah River in Augusta County.
- Buffalo**; creek, a small right-hand branch of Appomattox River in Prince Edward County.
- Buffalo**; creek, a small left-hand tributary to James River in Rockbridge County.
- Buffalo**; creek, a small left-hand tributary to James River in Nelson County.
- Buffalo**; creek, a small right-hand tributary to James River in Rockbridge County.
- Buffalo**; creek, a small right-hand branch of Roanoke River in Halifax County.
- Buffalo**; creek, a small left-hand tributary to Roanoke River in Bedford and Campbell counties.
- Buffalo**; creek, a small left-hand tributary to Roanoke River in Botetourt County.
- Buffalo**; ford over the North Fork of Holston River in Russell County.
- Buffalo**; gap, a small right-hand tributary to James River in Buchanan County.
- Buffalo**; gap in Little North Mountains, caused by Buffalo Branch, in Augusta County.
- Buffalo**; hill in Augusta County.
- Buffalo**; river, a left-hand tributary of James River, formed by North and South forks, in Amherst and Nelson counties.
- Buffaloforge**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 752 feet.
- Buffalo Gap**; post village in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,882 feet.
- Buffalo Junction**; post village in Mecklenburg County on the Southern Railway.
- Buffalo Lithia Springs**; post village in Mecklenburg County on the Southern Railway.
- Buffalo Mills**; post village in Rockbridge County.
- Buffalo Ridge**; mountains in Amherst and Nelson counties. Elevation, 1,000 feet.
- Buffalo Ridge**; post village in Patrick County.
- Buffalo Springs**; station on James River in Nelson County on the Chesapeake and Ohio Railway.
- Buffalo Station**; post village in Nelson County.
- Bula**; post village in Goochland County.
- Bull**; creek, a small right-hand branch of Clinch River, rising in Wise County.
- Bull**; creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.
- Bull**; run, a small right-hand tributary to Potomac River in Fairfax County.
- Bull**; run, a small right-hand tributary to Roanoke River in Franklin County.
- Bullbegger**; post village in Accomac County.
- Bull Pasture**; mountains in Highland County. Elevation, 2,500 to 3,000 feet.
- Bull Run**; mountains in Fauquier and Prince William counties. Elevation, 750 to 1,000 feet.
- Bullrun**; post village in Fairfax County.
- Bumpass**; post village in Louisa County on the Chesapeake and Ohio Railway.
- Bundick**; post village in Northumberland County.
- Bunkerhill**; post village in Bedford County.
- Bunker Hill**; summit in Franklin County.

- Burdens**; run, a small left-hand tributary to James River in Rockbridge County.
- Burger**; branch, a small left-hand tributary to Roanoke River in Campbell County.
- Burgess**; post village in Dinwiddie County on the Seaboard Air Line Railway.
- Burgess Store**; post village in Northumberland County.
- Burke Garden**; an elliptical valley drained by Wolf Creek into New River.
- Burkes Garden**; post village in Tazewell County on the Norfolk and Western Railway.
- Burkes Station**; post village in Fairfax County on the Southern Railway.
- Burketown**; post village in Augusta County.
- Burkeville**; town in Nottoway County. Population, 510.
- Burkfork**; post village in Floyd County.
- Burks**; fork, a small right-hand tributary to New River in Floyd and Carroll counties.
- Burks**; run, a small right-hand branch of New River in Pulaski County.
- Burnleys**; post village in Albemarle County on the Southern Railway.
- Burns**; creek, a small right-hand branch of Guest River in Wise County.
- Burns Knob**; summit in Rockingham County.
- Burnsville**; post village in Bath County.
- Burnt Chestnut**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Burrhill**; post village in Orange County.
- Burrowsville**; post village in Prince George County.
- Burton**; creek, a small right-hand tributary to James River in Campbell County.
- Burton**; post village in King and Queen County on the Chesapeake and Ohio Railway.
- Burtens Creek**; post village in Campbell County.
- Burts**; post village in Sussex County.
- Burwellville**; village in Pittsylvania County.
- Bush**; small creek in Princess Anne County, emptying into Willoughby Bay.
- Bush**; post village in Brunswick County.
- Bush**; river, a small right-hand branch of Appomattox River in Prince Edward County.
- Bush Ford**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Bushpark**; post village in Cumberland County.
- Bushy**; mountains in Wythe County. Elevation, 2,500 to 3,000 feet.
- Bushy**; post village in Middlesex County.
- Butcher**; creek, a small left-hand tributary to Powell River in Wise County.
- Butler**; mountain in Nelson County.
- Butt**; mountains in Giles County. Elevation, 2,500 to 4,195 feet.
- Butterwood**; creek, a small left-hand branch of Appomattox River in Powhatan County.
- Butterwood**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Butterwood**; creek, a small left-hand tributary to Roanoke River in Charlotte County.
- Butterworth**; bridge in Dinwiddie County.
- Button**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Butylo**; post village in Middlesex County.
- Buzzard Roost**; summit in Lee County. Elevation, 3,000 feet.
- Byars**; creek, a small left-hand branch of Middle Holston River in Smyth County.
- Bybee**; post village in Fluvanna County.
- Byrd**; creek, a small left-hand branch of James River in Fluvanna County.
- Byrdton**; post village in Northumberland County.

**Byrdville**; post village in Pittsylvania County.

**Cabell**; village in Carroll County.

**Cabin**; post village in Grayson County.

**Cabin**; run, a small right-hand tributary to Shenandoah River in Warren County.

**Cabinpoint**; post village in Surry County.

**Cahas**; mountains in Franklin County. Elevation, 1,500 to 3,000 feet.

**Cahas Knob**; summit in Franklin County.

**Ca Ira**; post village in Cumberland County.

**Caldwell**; mountains in Botetourt County. Elevation, 1,500 to 2,500 feet.

**Caledonia**; post village in Goochland County.

**Calfee**; ford over New River in Pulaski County.

**Calf Pasture**; river, a small left-hand tributary to James River in Augusta and Rockbridge counties.

**Calicorock**; post village in Franklin County.

**Callaghan**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 428 feet.

**Callands**; post village in Pittsylvania County.

**Callao**; post village in Northumberland County.

**Callaville**; post village in Brunswick County.

**Callaway**; post village in Franklin County.

**Callihan**; creek, a small right-hand branch of Powell River in Wise County.

**Calno**; post village in King William County.

**Calvary**; post village in Shenandoah County.

**Calverton**; post village in Fauquier County on the Chesapeake and Ohio and the Southern railways.

**Cambria**; post village in Montgomery County.

**Camden**; creek, a small left-hand tributary to James River in Rockingham County.

**Camden**; gap in Amherst County between Richardson and Cedar mountains.

**Camel**; post village in Carroll County.

**Cameron**; post village in Scott County.

**Cameron**; run, a small right-hand branch of Potomac River in Fairfax County.

**Camm**; post village in Buckingham County.

**Camp**; post village in Smyth County.

**Camp**; branch, a small right-hand tributary to Jackson River in Craig County.

**Camp**; creek, a small right-hand tributary to Roanoke River in Floyd County.

**Camp**; small creek rising and sinking in Lee County.

**Camp**; creek, a small right-hand tributary to New River in Floyd County.

**Camp**; fork, a small right-hand tributary to New River in Carroll and Floyd counties.

**Camp**; mountain in Rockbridge County.

**Campbell**; branch, a small left-hand tributary to Clinch River, rising in Russell County.

**Campbell**; county, in the southern part of the State in the Piedmont region. Its surface is undulating and somewhat broken in the southern part by short ridges, outliers of the Blue Ridge. The southern part is drained by the Roanoke and the northern part by the James. The altitude ranges from a little less than 500 feet up to 1,500 feet. Area, 554 square miles. Population, 23,256—white, 13,641; negro, 9,615; foreign born, 136. County seat, Rustburg. The mean magnetic declination in 1900 was  $2^{\circ} 10'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern and the Norfolk and Western railways.

**Campbell**; post village in Albermarle County on the Chesapeake and Ohio Railway.

**Campbells**; small left-hand branch of North Fork of Holston River in Smyth County.

**Campbells;** run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Campcreek;** post village in Floyd County.

**Camp Rock;** summit in Scott County. Elevation, 4,000 feet.

**Cana;** post village in Carroll County.

**Cane;** creek, a right-hand branch of Powell River in Lee County.

**Caney;** fork, a small right-hand branch of Clinch River, rising in Russell County.

**Cannon;** creek, a small left-hand tributary to James River in Henrico County.

**Canon;** post village in Carroll County.

**Canova;** post village in Prince William County.

**Canterburg;** post village in Frederick County.

**Cap;** post village in Carroll County.

**Cape Charles;** town in Northampton County on the New York, Philadelphia and Norfolk Railroad. Population, 1,040.

**Capeville;** post village in Northampton County.

**Capola;** mountain in Shenandoah County.

**Caponroad;** post village in Shenandoah County on the Baltimore and Ohio Railroad.

**Cappahosic;** post village in Gloucester County.

**Capron;** post village in Southampton County on the Southern Railway.

**Captain;** post village in Craig County.

**Card;** post village in Buchanan County.

**Cardinal;** post village in Mathews County.

**Cardinal;** summit in Amherst County.

**Cardwell;** post village in Goochland County.

**Caret;** post village in Essex County.

**Carlock;** creek, a small right-hand branch of Middle Fork of Holston River in Smyth County.

**Carloover;** post village in Bath County.

**Carltons Store;** post village in King and Queen County.

**Carmel;** post village in Shenandoah County.

**Carnation;** post village in King George County.

**Carne;** creek, a small right-hand tributary to James River in Alleghany County.

**Caroline;** county, situated in the central part of the State on the Atlantic plain. It has a rolling surface, and is but little elevated above sea level. Area, 562 square miles. Population, 16,709—white, 7,667; negro, 9,042; foreign born, 50. County seat, Bowling Green. The mean magnetic declination in 1900 was  $3^{\circ} 55'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Richmond, Fredericksburg and Potomac Railroad.

**Carrico;** post village in Culpeper County.

**Carrie;** post village in Dickenson County.

**Carroll;** county, situated in the southern part of the State. It is limited on the south by the summit of the Blue Ridge, on the west by New River, and on the north and east by arbitrary lines. Its surface is an elevated, undulated plateau, drained by many streams to New River. The altitude ranges from 2,000 to 3,600 feet above sea level. Area, 445 square miles. Population, 19,303—white, 18,964; negro, 339; foreign-born, 11. County seat, Hillsville. The mean magnetic declination in 1900 was  $1^{\circ}$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Carroll Sulphur;** springs in Carroll County.

**Carrollton;** post village in Isle of Wight County.

**Carrs;** mountain in Madison County. Elevation, 1,300 feet.

**Carrsville;** post village in Isle of Wight County on the Seaboard Air Line Railway.



- Carsley**; post village in Surry County.
- Carson**; post village in Prince George County.
- Carsonville**; post village in Grayson County.
- Carter**; ferry over Clinch River in Scott County.
- Carter**; mountains in Albemarle County. Elevation, 500 to 1,500 feet.
- Carter**; run, a small left-hand branch of Rappahannock River in Fauquier County.
- Carters Bridge**; post village in Albemarle County.
- Carters Island**; ford over Roanoke River in Bedford County.
- Carters Island**; post village in Bedford County.
- Carters Mills**; post village in Patrick County.
- Cartersville**; post village in Cumberland County.
- Carters Wharf**; post village in Richmond County.
- Carterton**; post village in Russell County on the Norfolk and Western Railway.  
Altitude, 1,495 feet.
- Carthage**; post village in Floyd County.
- Cartmill**; gap in the northern part of Purgatory Mountains, caused by Purgatory Creek.
- Cartwrights Wharf**; post village in Nansemond County.
- Carvins**; cove in Tinker Mountains drained by Carvins Creek in Botetourt County.
- Carvins**; creek, a small left-hand tributary to Roanoke River in Botetourt County.
- Carysbrook**; post village in Fluvanna County.
- Casanova**; post village in Fauquier County on the Southern Railway.
- Cascade**; post village in Pittsylvania County on Danville and Western Railway.
- Casco**; post village in Hanover County.
- Cash**; post village in Gloucester County.
- Cashville**; post village in Accomac County.
- Caskie**; post village in Nelson County on the Chesapeake and Ohio Railway.
- Cassel**; post village in Patrick County.
- CastleCraig**; post village in Campbell County.
- Castleman**; ferry over Shenandoah River in Clarke County.
- Castlemans Ferry**; post village in Clarke County.
- Castle Rock**; summit in Albemarle County.
- Castleton**; post village in Rappahannock County.
- Castlewood**; post village in Russell County on the Norfolk and Western Railway.  
Altitude, 1477 feet.
- Cast Steel**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Catalpa**; post village in Culpeper County.
- Catawba**; creek, a small right-hand tributary to James River in Roanoke County.
- Catawba**; creek, a small right-hand branch of James River in Botetourt County,  
formed by North and South forks.
- Catawba**; mountains in Roanoke County. Elevation, 2,000 to 2,906 feet.
- Catawba**; post village in Roanoke County.
- Catharines**; branch, a small left-hand tributary to North Fork of Holston River,  
rising in Washington County.
- Catharpin**; post village in Prince William County.
- Catharpin**; run, a small right-hand tributary to Mattaponi River in Spottsylvania  
County.
- Catharpin**; run, a small right-hand tributary to Potomac River in Prince William  
County.
- Cathay**; village in Augusta County.
- Catlett**; post village in Fauquier County on the Southern Railway.
- Catoctin**; creek, a small right-hand branch of Potomac River formed by two forks,  
North and South, in Loudoun County.
- Catoctin**; mountains in Loudoun County. Elevation, 500 feet.

**Catron**; post village in Wythe County.

**Cattail**; branch, a small right-hand tributary to James River in Dinwiddie County.

**Cattail**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Cauthornville**; post village in King and Queen County.

**Cave**; mountain in Wythe County. Elevation, 2,500 feet.

**Cave Hill**; summit in Augusta County.

**Cave Spring**; branch, a small right-hand tributary to Roanoke River in Roanoke County.

**Cavespring**; post village in Roanoke County.

**Cavitt**; creek, a small right-hand branch of Clinch River, rising in Tazewell County.

**Caylor**; post village in Lee County.

**Cedar**; creek, a small left-hand tributary to Clinch River, rising in Russell County.

**Cedar**; creek, a small right-hand branch of James River in Rockbridge County.

**Cedar**; creek, a small left-hand tributary to James River in Bath County.

**Cedar**; creek, a small right-hand branch of Middle Holston River in Washington County.

**Cedar**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Cedar**; creek, a small left-hand branch of Shenandoah River in Frederick and Warren counties.

**Cedar**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Cedar**; mountain in Amherst County.

**Cedar**; run, a small left-hand tributary to New River in Wythe County.

**Cedar**; run, a small right-hand tributary to Potomac River in Prince William and Fauquier counties.

**Cedar**; run; a small right-hand tributary to Potomac River in Fauquier County.

**Cedar**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Cedar**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Cedar**; small island in Back Bay in Princess Anne County.

**Cedar**; small point of land in Isle of Wight County, extending into James River.

**Cedarbluff**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 1,988 feet.

**Cedar Forest**; post village in Pittsylvania County.

**Cedargrove**; post village in Frederick County.

**Cedar Ridge**; mountains in Botetourt County. Elevation, 1,500 feet.

**Cedar Springs**; post village in Wythe County.

**Cedarville**; post village in Warren County on the Norfolk and Western Railway. Altitude, 566 feet.

**Cedon**; post village in Caroline County.

**Cellar**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Cellar**; mountain in Augusta County. Elevation, 2,500 feet.

**Centenary**; post village in Buckingham County.

**Centercross**; post village in Essex County.

**Center Mills**; post village in Montgomery County.

**Centerville**; post village in Fairfax County.

**Centralia**; post village in Chesterfield County.

**Central Lovely**; mountain in Pulaski County. Elevation, 1,785 feet.

**Centralplains**; post village in Fluvanna County.

**Centralpoint**; post village in Caroline County.

**Cephas**; post village in Mecklenburg County.

**Ceres**; post village in Bland County.



**Chaffin**; bluff in Henrico County.

**Chaffin**; post village in Halifax County.

**Chalk**; mountains in Albemarle County.

**Chalk**; run, a small left-hand tributary to James River in Rockbridge County.

**Chalklevel**; post village in Pittsylvania County.

**Chalk Mine**; mountain in Rockbridge County. Elevation, 2,960 feet.

**Chamberlains Bed**; small left-hand tributary to Nottoway River in Dinwiddie County.

**Chambersville**; post village in Frederick County.

**Chamblissburg**; post village in Bedford County.

**Champlain**; post village in Essex County.

**Chance**; post village in Essex County.

**Chandler**; mountain in Campbell County. Altitude, 1,405 feet.

**Chandler**; post village in Lee County.

**Chaney**; small right-hand branch of Cripple Creek in Wythe County.

**Chaney's**; post village in Pittsylvania County.

**Chantilly**; post village in Fairfax County.

**Chap**; post village in Appomattox County.

**Charity**; post village in Patrick County.

**Charlemont**; post village in Bedford County, lying between the James and Appomattox rivers, just above their junction, but on the Atlantic plain. The surface is low and rolling, but little elevated above tide.

**Charles**; cape, point of land in Northampton County, the northern point at the entrance to Chesapeake Bay.

**Charles City**; county, situated in the eastern part of the State. Area 183 square miles. Population, 5,040—white, 1,344; negro, 3,696; foreign born, 15. County seat, Charles City. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Charles City**; county seat of Charles City County.

**Charlie Hope**; post village in Brunswick County.

**Charlotte**; county, situated in the southern part of the State in the Piedmont region. Its surface presents but little relief, ranging from 300 to 500 feet above sea level. Area 479 square miles. Population, 15,343—white, 6,798; negro, 8,545; foreign born, 37. County seat, Charlotte. The mean magnetic declination in 1900 was  $2^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern Railway.

**Charlotte**; county seat of Charlotte County.

**Charlottesville**; city, located in Albemarle County on the Chesapeake and Ohio and the Southern railways. It is independent in government, and has a population of 6,449. It contains the court-house.

**Chase**; village in Mecklenburg County on the Southern Railway. Population, 542.

**Chase Wharf**; post village in Lancaster County.

**Chatham**; county seat of Pittsylvania County on the Southern Railway. Altitude, 624 feet. Population, 918.

**Chatham Hill**; post village in Smyth County.

**Chatmoss**; post village in Henry County on the Danville and Western Railway.

**Chatterton**; post village in King George County.

**Cheapside**; post village in Northampton County.

**Cheatwood**; post village in Appomattox County.

**Check**; post village in Floyd County.

**Cheese**; creek, a small, left-hand tributary to Roanoke River in Campbell County.

**Chells**; ford over Roanoke River in Pittsylvania County.

**Cherriton**; post village in Northampton County.

**Cherry**; village in Norfolk County.

**Cherrydale**; post village in Alexandria County.

**Cherrygrove**; post village in Rockingham County.

**Cherrystone**; post village in Northampton County.

**Chesapeake**; largest bay on the Atlantic coast. It stretches northward from Capes Charles and Henry at its entrance for 175 miles, with an average breadth of from 25 to 30 miles, and is navigable to its head by vessels of considerable draft. It penetrates the States of Virginia and Maryland. Into it flow many rivers, especially from the west, the largest of which are the Potomac, Rappahannock, York, and James. Upon its west are the important cities of Baltimore, Newport News, and Norfolk.

**Chesapeake**; post village in Northampton County.

**Chesconnessex**; post village in Accomac County.

**Chester**; gap in the Blue Ridge. Altitude, 1,320 feet.

**Chester**; post village in Chesterfield County, on the Atlantic Coast Line, the Farmville and Powhatan, and the Seaboard Air Line railroads.

**Chesterbrook**; post village in Fairfax County.

**Chesterfield**; county, situated in the central part of the State in the Piedmont region, the boundary upon the north being in part the Appomattox River. The surface is undulating or rolling, elevated 200 or 300 feet above sea level. Area, 484 square miles. Population, 18,804—white, 11,105; negro, 7,699; foreign born, 361. County seat, Chesterfield. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line, the Seaboard Air Line, the Farmville and Powhatan, and the Southern railroads.

**Chesterfield**; county seat of Chesterfield County.

**Chestnut**; creek, a right-hand branch of New River in Carroll County.

**Chestnut**; creek, a right-hand tributary to Roanoke River in Franklin County.

**Chestnut**; post village in Amherst County.

**Chestnutfork**; post village in Bedford County.

**Chestnut Level**; summit in Alleghany Front, in Bath County.

**Chestnut Lick**; small right-hand tributary to Potomac River in Prince William County.

**Chestnut Mountain**; summit in Botetourt County. Elevation, 2,000 to 2,500 feet.

**Chestnut Ridge**; mountains in Amherst County. Elevation, 2,000 to 3,000 feet.

**Chestnut Ridge**; mountains in Augusta County.

**Chestnut Ridge**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.

**Chestnut Ridge**; mountains in Bland County.

**Chestnut Ridge**; mountains in Rockingham County. Elevation, 1,500 feet.

**Chestnut Ridge**; mountains in Scott County.

**Chestnut Ridge**; mountains in Smyth and Wythe counties. Elevation, 2,500 feet.

**Chestnut Ridge**; mountains in Tazewell and Bland counties. Elevation, 3,000 to 4,000 feet.

**Chestnut Ridge**; mountains in Washington County.

**Chestnut Ridge**; summit in Rockingham County.

**Chickahominy**; river, heading in the eastern edge of the Piedmont region and flowing southeast, joining James River a short distance above its mouth.

**Childress**; post village in Montgomery County.

**Chilesburg**; post village in Caroline County.

**Chilhowie**; small right-hand branch of Middle Fork of Holston River in Smyth County.

**Chilhowie**; post village in Smyth County on the Norfolk and Western Railway.

**Chiltons**; post village in Westmoreland County.

**Chimney**; branch, a small right-hand tributary to New River in Pulaski County.

**Chimney**; run, a small left-hand tributary to James River in Bath County.

**Chimney Rock**; fork, a small right-hand tributary to Clinch River in Scott County.

**Chincoteague Island**; post village in Accomac County.

**Chisel Knob**; summit in Carroll County. Elevation, 3,663.

**Chisleys**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Chopawamsic**; creek, a small right-hand branch of Potomac River in Prince William and Stafford counties.

**Chrisman**; post village in Rockingham County.

**Christian**; creek, a small tributary to Shenandoah River in Augusta County.

**Christiansburg**; county seat of Montgomery County on the Norfolk and Western Railway. Altitude, 2,007 feet. Population, 659.

**Christie**; post village in Halifax County on the Southern Railway.

**Christopher**; creek, a small left-hand tributary to York River in Louisa County.

**Chub**, post village in Sussex County.

**Chuckatuck**; post village in Nansemond County.

**Chuckatuck Island**; small creek emptying into James River in Nansemond County.

**Chula Depot**; post village in Amelia County on the Southern Railway.

**Chum**; post village in Carroll County.

**Church**; small right-hand branch of Slat Creek in Buchanan County.

**Church**; ford in Clinch River in Scott County.

**Church**; run, a small right-hand tributary to York River in Orange County.

**Churchland**; post village in Norfolk County on the Atlantic Coast Line Railroad.

**Church Road**; post village in Dinwiddie County on the Norfolk and Western Railway.

**Church Rock**; summit in North Mountain.

**Church View**; post village in Middlesex County.

**Churchville**; post village in Augusta County.

**Churchwood**; post village in Pulaski County.

**Cifax**; post village in Bedford County.

**Cisco**; post village in Mecklenburg County.

**Cismont**; post village in Albemarle County.

**Citypoint**; post village in Prince George County on the Norfolk and Western Railway.

**Claiborne**; post village in Amherst County.

**Claudville**; post village in Patrick County.

**Clapboard**; creek, a small right-hand branch of New River in Pulaski County.

**Clare**; post village in Augusta County.

**Claremont**; village in Surry County on the Southern Railway. Population, 565.

**Claresville**; post village in Greensville County.

**Clark**; mountains in Orange County. Elevation, 500 to 1,000 feet.

**Clarke**; county, situated in the northern part of the State in the Shenandoah Valley, the eastern boundary being the crest of the Blue Ridge. The surface is mainly level, but in the eastern part are the heavy spurs of the Blue Ridge. Area, 189 square miles. Population, 7,927—whites, 5,695; negro, 2,231; foreign born, 29. County seat, Berryville. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Clarkes**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Clarkes Gap**; post village in Loudoun County on the Southern Railway. Altitude, 578 feet.

**Clarks**; creek, a small left-hand tributary to James River in Amherst County.

**Clarkson**; post village in Culpeper County.

**Clarksville**; town in Mecklenburg County on the Southern Railway. Population,

- Clarkton**; post village in Halifax County on the Norfolk and Western Railway.
- Clary**; post village in Shenandoah County.
- Claudville**; post village in Patrick County.
- Clay**; small right-hand branch of Roanoke River in Pittsylvania County.
- Claybank**; post village in Gloucester County.
- Clayce**; post village in Floyd County.
- Claypool**; post village in Nelson County.
- Clays Mills**; post village in Halifax County.
- Clayville**; post village in Powhatan County on the Southern Railway.
- Clear**; creek, a small right-hand branch of New River in Wythe and Carroll counties.
- Clear**; creek, a small right-hand branch of Great River in Wise County.
- Clear**; creek, a small right-hand tributary to Beaver Creek, rising in Washington County.
- Clear**; fork, a tributary to Wolf Creek, rising in Tazewell County.
- Clear**; fork, a small right-hand branch of New River in Grayson County.
- Clearbrook**; post village in Frederick County on the Cumberland Valley Railroad.
- Clearfork**; post village in Bland County.
- Cleave Knob**; mountains in Wythe County. Elevation, 2,500 feet.
- Cleghorn**; valley in Smyth County.
- Clems Branch**; post village in Grayson County.
- Clendening**; creek, a small right-hand branch of New River in Giles County.
- Cleopus**; post village in Nansemond County.
- Cleveland**; post village in Russell County on the Norfolk and Western Railway.  
Altitude, 1,425 feet.
- Clevilas**; post village in Bedford County.
- Clide**; village in Russell County.
- Cliff Mills**; post village in Fauquier County.
- Clifford**; post village in Amherst County.
- Clift**; post village in Alleghany County.
- Clifton Forge**; town in Alleghany County on the Chesapeake and Ohio Railway.  
Altitude, 1,052 feet. Population, 3,212.
- Clifton Station**; post village in Fairfax County on the Southern Railway.
- Clinch**; mountain ridge extending from Grainger County, Tenn., to Tazewell County, Va. Maximum height, 4,274 feet.
- Clinch**; post village in Scott County.
- Clinch**; river, rising in Tazewell County, Va., flowing southwest into Kingston County, Tenn., and discharging into Tennessee River.
- Clinchport**; town in Scott County, on the Virginia and Southwestern Railway.  
Population, 183.
- Clinton**; post village in Cumberland County.
- Clintwood**; county seat of Dickenson County. Population, 255.
- Clio**; post village in Floyd County.
- Clip**; village in Washington County.
- Clito**; post village in Grayson County.
- Clover**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Clover**; hollow, a small right-hand tributary to New River in Craig and Giles counties.
- Clover**; town in Halifax County on the Southern Railway. Population, 400.
- Clovercreek**; post village in Highland County.
- Cloverdale**; post village in Botetourt County on the Norfolk and Western Railway. Altitude, 1,122 feet.
- Cloyds**; mountains in Pulaski County. Elevation, 2,000 to 2,500 feet.
- Clung**; post village in Carroll County.
- Coakley**; post village in Stafford County.

- Coal**; creek, a small right-hand branch of Clinch River in Tazewell County.
- Coal**; run, a small right-hand tributary to Bluestone River in Tazewell County.
- Coal**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Coalcreek**; post village in Carroll County.
- Coal Hill**; post village in Henrico County.
- Coan**; post village in Northumberland County.
- Coates**; post village in Louisa County.
- Cobbler**; mountains in Bath County.
- Cobbs Creek**; post village in Mathews County.
- Cobbs Mount**; summit in Bedford County. Elevation, 1,410 feet.
- Cobham**; post village in Albemarle County on the Chesapeake and Ohio Railway.
- Coby Knob**; summit in Grayson County.
- Cochran**; post village in Brunswick County on the Seaboard Air Line Railway.
- Cockpit**; point on Potomac River in Prince William County.
- Coddysore**; post village in Sussex County.
- Cody**; post village in Halifax County.
- Coeburn**; town in Wise County on the Norfolk and Western Railway. Altitude, 1,982 feet. Population, 295.
- Coffee**; creek, a small left-hand tributary to James River in Amherst County.
- Coffee**; post village in Bedford County.
- Cohoke**; post village in King William County.
- Coke**; post village in Gloucester County.
- Coldharbor**; village in Hanover County.
- Cold Sulphur Springs**; post village in Rockbridge County.
- Cole**; creek, a small right-hand tributary to New River in Carroll County.
- Colemans Falls**; post village in Bedford County on the Chesapeake and Ohio Railway.
- Cole Mountain**; summit in Amherst County.
- Coles**; creek, a small right-hand tributary to Roanoke River in Franklin County.
- Coles Ferry**; post village in Charlotte County.
- Coles Knob**; summit in Floyd County. Elevation, 2,903 feet.
- Coles Knob**; summit in Franklin County.
- Coles Point**; post village in Westmoreland County.
- Colesville**; post village in Patrick County.
- Colina**; post village in Dinwiddie County.
- Colleen**; post village in Nelson County.
- College Park**; post village in Campbell County.
- Colley**; post village in Dickenson County.
- Collier**; creek, a small right-hand tributary to James River in Rockbridge County.
- Colliertown**; post village in Rockbridge County.
- Collins Mill**; post village in Grayson County.
- Collinsville**; post village in Frederick County.
- Collison Ridge**; mountains in Bath County. Elevation, 2,000 to 2,500 feet.
- Cologne**; post village in King and Queen County.
- Colonial Beach**; town in Westmoreland County. Population, 453.
- Colosse**; post village in Isle of Wight County.
- Columbia**; town in Fluvanna County on the Chesapeake and Ohio Railway. Population, 216.
- Columbia Furnace**; post village in Shenandoah County.
- Columbian Grove**; post village in Lunenburg County.
- Colvin Run**; post village in Fairfax County.
- Comans Well**; post village in Sussex County.
- Comb Point**; summit in Russell County. Elevation, 2,000 feet.
- Comer Rock**; summit in Iron Mountains. Elevation, 4,113 feet.

- Comers Rock**; post village in Grayson County.
- Comet**; post village in Isle of Wight County.
- Comfort**; post village in Lee County.
- Como**; village in Henry County.
- Comorn**; post village in King George County.
- Compton**; post village in Page County on the Norfolk and Western Railway.
- Concord Depot**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 833 feet.
- Cone**; mountains in Nelson County.
- Conicville**; post village in Shenandoah County.
- Conklin**; post village in Loudoun County.
- Conley**; post village in Southampton County.
- Conrad**; ferry across Potomac River in Loudoun County.
- Conrads Mills**; post village in Middlesex County.
- Consent**; post village in Patrick County.
- Contra**; post village in King and Queen County.
- Contrary**; creek, a small left-hand tributary to York River in Louisa County.
- Contrary**; creek, a small right-hand branch of Levisa Fork in Buchanan County.
- Converse**; post village in Norfolk County.
- Conway**; river, a small right-hand tributary to Rappahannock River in Greene County.
- Cook**; post village in Carroll County.
- Cooks**; creek, a small left-hand tributary to York River in Orange County.
- Cooks**; run, a small left-hand tributary to South Fork of Roanoke River in Montgomery County.
- Coolwell**; post village in Amherst County.
- Coonseye**; post village in Wise County.
- Coonsville**; post village in Bedford County.
- Cooper**; post village in Middlesex County.
- Cootes Store**; post village in Rockingham County.
- Copeland**; post village in Nansemond County on the Southern Railway.
- Copper**; creek, a small left-hand tributary to Clinch River, rising in Russell County.
- Copper**; ridge, in Russell and Scott counties, extending northeast and southwest. Elevation, 2,000 to 2,500 feet.
- Copperhill**; post village in Floyd County.
- Copper Valley**; post village in Floyd County.
- Corbet**; post village in Scott County.
- Corbin**; post village in Caroline County.
- Cordova**; post village in Culpeper County.
- Corinth**; post village in Wythe County.
- Corleyville**; post village in Roanoke County.
- Cornland**; post village in Norfolk County.
- Cornsville**; post village in Scott County.
- Cornwall**; post village in Rockbridge County on the Norfolk and Western Railway.
- Cosby**; post village in Orange County.
- Cotman**; post village in Henrico County.
- Cotopaxi**; post village in Augusta County on the Norfolk and Western Railway.
- Coulson**; post village in Carroll County.
- Council**; post village in Buchanan County.
- Counts**; village in Russell County.
- Court House**; creek, a small left-hand tributary to James River in Goochland County.
- Courtland**; county seat of Southampton County on the Southern Railway. Population, 288.



**Cove**; creek, a small left-hand branch of Cripple Creek in Wythe County.

**Cove**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Cove**; creek, a small left-hand tributary to James River in Albemarle and Nelson counties.

**Cove**; creek, a small right-hand branch of Clinch River in Scott County.

**Cove**; creek, a small right-hand branch of North Fork of Holston River in Smyth County.

**Cove**; creek, a small right-hand tributary to Jackson River in Alleghany County

**Cove**; creek, a small right-hand tributary to Wolf Creek in Tazewell County.

**Cove**; mountains in Craig and Roanoke counties. Elevation, 2,500 to 3,000 feet.

**Cove**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Cove**; run, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Covecreek**; post village in Tazewell County.

**Cove Mountain**; summit in Rockingham County. Elevation, 2,000 feet.

**Cove Ridge**; mountains in Scott County. Elevation, 2,000 feet.

**Covesville**; post village in Albemarle County on the Southern Railway. Altitude, 804 feet.

**Coveton**; post village in Wythe County.

**Covington**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Covington**; county seat of Alleghany County on the Chesapeake and Ohio Railway. Population, 2,950. Altitude, 1,245 feet.

**Cowan**; small branch of Sinking Creek in Scott County.

**Cowan**; small right-hand branch of Opossum Creek in Scott County.

**Cowans Depot**; post village in Rockingham County.

**Cowans Mills**; post village in Montgomery County.

**Cowardin**; post village in Bath County.

**Cowardin**; run, a small left-hand tributary to James River in Bath County.

**Cowart**; post village in Northumberland County.

**Cowpasture**; river, a small left-hand branch of James River in Bath County.

**Cowpasture**; river, a left-hand tributary to James River in Highland County.

**Cox**; small right-hand branch of North Fork of Clinch River in Scott County.

**Cox**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Cox**; creek, a small right-hand tributary to North Fork of Powell River.

**Cox**; ferry across New River in Pulaski County.

**Cox**; ford over New River.

**Cox**; post village in Lee County.

**Cox Knob**; summit in Botetourt County. Elevation, 3,525 feet.

**Coyners**; mountain in Botetourt County. Elevation, 1,500 feet.

**Coyners Springs**; post village in Botetourt County.

**Crab**; creek, a small right-hand branch of New River in Pulaski County.

**Crab**; creek, a small right-hand tributary to New River in Grayson County.

**Crab**; post village in Gloucester County.

**Crab**; run, a small left-hand tributary to James River in Highland County.

**Crabbottom**; post village in Highland County.

**Crabneck**; post village in York County.

**Crab Orchard**; creek, a small right-hand tributary to Walker Creek, rising in Bland County.

**Crab Orchard**; creek, small right-hand branch of North Fork of Powell River.

**Crab Orchard**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Crab Orchard**; post village in Lee County.

**Crabtree**; falls in a branch of South Fork of Tye River in Nelson County.

**Craddock**; creek, a small left-hand branch of Roanoke River in Bedford County.

**Craddockville**; post village in Accomac County.

**Craft**; ferry over Clinch River in Scott County.

**Crafts**; ford in Blackwater River in Franklin County.

**Cragged**; branch, a small left-hand tributary to Roanoke River in Bedford County.

**Craig**; county, situated in the western part of the State in the Appalachian Valley.

Area, 351 square miles. Its surface consists of an alternation of parallel ridges, trending northeast and southwest, separated by limestone valleys, and is drained by branches of James River. The altitude ranges from 1,200 to 3,600 feet above sea level. Population, 4,293—white, 4,032; negro, 261; foreign born, 9. County seat, Newcastle. The mean magnetic declination in 1900 was 1° 10'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio Railway.

**Craig**; creek, a right-hand tributary to Jackson River in Craig County.

**Craig**; creek, a right-hand tributary to James River in Craig and Montgomery counties.

**Craig City**; post village in Craig County.

**Craig Healing**; springs in Craig County.

**Craigs Creek**; post village in Craig County.

**Craigs Mills**; village in Washington County.

**Craigsville**; post village in Augusta County on the Chesapeake and Ohio Railway.

Altitude, 1,515 feet.

**Cranberry**; creek, a small right-hand tributary to New River in Carroll County.

**Crandon**; post village in Bland County.

**Cranes Nest**; creek, a small left-hand tributary to Russell Fork, rising in Dickenson County.

**Cranes Nest**; post village in Wise County.

**Craney**; island in Elizabeth River.

**Craney**; island in James River in Norfolk County.

**Crank**; post village in Louisa County on the Chesapeake and Ohio Railway.

**Crawford**; gap in Tobacco Row Mountain in Amherst County.

**Crawford**; mountains in Augusta County. Elevation, 2,500 to 3,500 feet.

**Crawford Draft**; small tributary to Shenandoah River in Augusta County.

**Crawford Ridge**; mountains in Montgomery and Roanoke counties.

**Crayon**; post village in Mecklenburg County.

**Creeds**; post village in Princess Anne County.

**Cremona**; post village in Cumberland County.

**Creola**; post village in Grayson County.

**Cressy**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.

**Crest**; post village in Stafford County.

**Creswell**; village in Russell County.

**Crewe**; town in Nottoway County on the Norfolk and Western Railway. Population, 1,329.

**Crichton**; post village in Brunswick County.

**Cricket Hill**; post village in Mathews County.

**Criders**; post village in Rockingham County.

**Criglersville**; post village in Madison County.

**Crimora Station**; post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,239 feet.

**Cripple**; creek, a left-hand branch of New River in Wythe County.

**Cripple**; creek, a right-hand branch of New River, rising in Smyth County.

**Cripple Creek**; post village in Wythe County on the Norfolk and Western Railway.



**Crittenden**; post village in Nansemond County.

**Critz**; post village in Patrick County on the Danville and Western Railway.

**Croaker**; post village in James City County.

**Crockett**; cove in Big Stone Ridge in Tazewell County.

**Crockett Depot**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 2,327 feet.

**Crockett Springs**; post village in Montgomery County.

**Crofton**; post village in Fluvanna County.

**Cromwells**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Crooked**; branch, a small right-hand tributary to James River in Chesterfield County.

**Crooked**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.

**Crooked**; creek, a right-hand branch of New River in Carroll County.

**Crooked**; run, a small right-hand branch of Potomac River in Fauquier County.

**Crooked**; run, a small right-hand tributary to James River in Botetourt County.

**Crooked**; run, a small right-hand tributary to Roanoke River in Franklin County.

**Crooked**; run, a small right-hand tributary to Rappahannock River bordering on Culpeper and Madison counties.

**Crookedrun**; post village in Culpeper County.

**Crosby**; post village in Campbell County.

**Cross Junction**; post village in Frederick County.

**Crosskeys**; post village in Rockingham County.

**Crossroads**; post village in Halifax County.

**Crouch**; post village in King and Queen County.

**Crow**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Crowell**; gap, in the Blue Ridge in Franklin County.

**Crowspring**; village in Chesterfield County.

**Croxton**; post village in Caroline County.

**Grozet**; post village in Albemarle County on the Chesapeake and Ohio Railway. Altitude, 718 feet.

**Cruise**; post village in Patrick County.

**Crump**; creek, a small right-hand branch of Pamunkey River in Hanover County.

**Crump**; post village in Amelia County.

**Crums**; post village in Clarke County.

**Crush**; run, a small right-hand tributary to James River in Botetourt County.

**Crystal**; post village in Bedford County.

**Crystalhill**; post village in Halifax County on the Norfolk and Western Railway. Altitude, 547 feet.

**Cub**; creek, a small left-hand tributary to Roanoke River in Appomattox and Charlotte counties.

**Cub**; creek, a small right-hand tributary to York River in Louisa County.

**Cub**; run, a small left-hand branch of Shenandoah River in Rockingham County.

**Cub**; run, a small left-hand tributary to James River in Nelson County.

**Cub**; run, a small right-hand tributary to Potomac River in Fairfax County.

**Cub**; run, a small right-hand tributary to Shenandoah River in Page County.

**Cubcreek**; post village in Charlotte County.

**Cuckoo**; post village in Louisa County.

**Culpeper**; county, situated in the eastern part of the State in the Piedmont region.

It has a rolling surface, broken here and there by short ridges. The altitude is only a few hundred feet above the sea. Area, 399 square miles. Population, 14,123—white, 8,069; negro, 6,053; foreign born, 59. County seat, Culpeper. The mean magnetic declination in 1900 was 3° 55'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 60°. The county is traversed by the Chesapeake and Ohio and the Southern railways.

- Culpeper**; county seat of Culpeper County on the Chesapeake and Ohio and the Southern railways. Population, 1,618.
- Cumberland**; county, situated in the central part of the State in the Piedmont region. It is drained by James River, which flows along its southern boundary. Willis River, a branch of the James, crosses it from southwest to northeast. Altitude, 200 to 500 feet. Area, 297 square miles. Population, 8,996—white, 2,791; negro, 6,205; foreign born, 16. County seat, Cumberland. The mean magnetic declination in 1900 was  $3^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature is  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Farmville and Powhatan and the Norfolk and Western railroads.
- Cumberland**; county seat of Cumberland County on the Farmville and Powhatan Railroad.
- Cumberland**; gap in the Cumberland Mountains at the southwestern corner of State. Altitude, 1,600 feet.
- Cumberland**; mountains in the southwestern part of Lee County, forming the boundary line between Kentucky and Virginia. Elevation, 2,500 to 3,000 feet.
- Cumbow**; village in Lee County.
- Cumnor**; post village in King and Queen County.
- Cunningham**; creek, a small left-hand tributary to James River in Fluvanna County.
- Cunningham**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.
- Curdsville**; post village in Buckingham County.
- Curles**; neck of land formed by a bend in the James River in Henrico County.
- Curlew**; post village in Spottsylvania County.
- Currin**; post village in Montgomery County.
- Curtis**; post village in Bedford County.
- Curve**; post village in Giles County on the Norfolk and Western Railway.
- Cuscowilla**; post village in Mecklenburg County.
- Cutalong**; post village in Louisa County.
- Cut Banks**; ford across Appomattox River in Buckingham County.
- Cutler**; post village in Caroline County.
- Cuzco**; post village in Louisa County.
- Cynthia**; village in Lee County.
- Cypress Chapel**; post village in Nansemond County.
- Dabneys**; post village in Louisa County.
- Daggers**; post village in Botetourt County.
- Dahlia**; post village in Greenesville County.
- Daisy**; post village in King and Queen County.
- Dalbys**; post village in Northampton County.
- Dale**; mountain in Rockbridge County.
- Dale Enterprise**; post village in Rockingham County. Altitude, 1,350 feet.
- Daleville**; post village in Botetourt County.
- Dalzell**; post village in Campbell County.
- Damascus**; post village in Washington County.
- Damon**; post village in Albemarle County.
- Dan**; small right-hand branch of Knox Creek in Buchanan County.
- Dan**; river of North Carolina and Virginia, one of the two main branches of Roanoke River. It heads in northwestern North Carolina and flows in a generally north-east course to its junction with the Roanoke in Halifax County, Va.; mean discharge, 3,026 cubic feet per second. It is navigable to Madison, N. C.
- Daniels**; run, a small left-hand tributary to Staunton River in Franklin County.
- Danieltown**; post village in Brunswick County.
- Danripple**; post village in Halifax County.

**Danton**; post village in Orange County.

**Danville**; city, independent in government, located on Dan River in Pittsylvania County on the Danville and Western and the Southern railways. Population, 16,520.

**Darden**; post village in Isle of Wight County.

**Dark**; run, a small right-hand branch of Roanoke River in Montgomery County.

**Darlington Heights**; post village in Prince Edward County.

**Dartha**; post village in Wise County.

**Darvills**; post village in Dinwiddie County.

**Darwin**; post village in Dickenson County.

**Dash**; post village in New Kent County.

**Daugherty**; post village in Accomac County.

**Davenport**; post village in Buchanan County.

**David**; creek, a small right-hand branch of James River in Appomattox and Buckingham counties.

**Davids**; run, a small right-hand tributary to James River in Botetourt County.

**Davis**; branch, a small left-hand tributary to James River in Amherst County.

**Davis**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Davis Knob**; summit in Grayson County. Elevation, 3,020.

**Davis Mills**; post village in Bedford County.

**Davis Wharf**; post village in Accomac County.

**Dawn**; post village in Caroline County.

**Dawson**; creek, a small right-hand branch of Appomattox River in Amelia County.

**Dawson**; summit in Nelson County.

**Dawsonville**; post village in Greene County.

**Daysville**; post village in Loudoun County.

**Dayton**; town in Rockingham County on the Chesapeake and Western Railway. Population, 425.

**Dean**; creek, a small right-hand branch of New River, rising in Wythe County.

**Deane**; post village in Nansemond County on the Norfolk and Carolina Railroad.

**Dearborn**; post village in Amherst County.

**Deatonsville**; post village in Amelia County.

**Debusk**; post village in Dickenson County.

**De Bust**; ford of Powell River in Lee County.

**Deep**; creek, a left-hand tributary to Elizabeth River in Norfolk County.

**Deep**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.

**Deep**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Deep**; creek, a small right-hand branch of Appomattox River in Amelia County.

**Deep**; creek, a small right-hand branch of James River in Powhatan County.

**Deep**; creek, a small right-hand tributary to York River in Louisa County.

**Deep**; run, a small left-hand branch of Rappahannock River in Fauquier and Stafford counties.

**Deep**; run, a small left-hand tributary to James River in Henrico County.

**Deep**; run, a small right-hand tributary to Rappahannock River in Madison County.

**Deep**; run, a small right-hand branch of the Rappahannock River in Spottsylvania County.

**Deep**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Deepcreek**; post village in Norfolk County.

**Deep Water**; creek, a small right-hand tributary to New River in Floyd and Carroll counties.

**Deep Water**; fork, small left-hand tributary to New River in Carroll County.

- Deerfield**; post village in Augusta County.
- Deer Head**; summit in Shenandoah County.
- Deerrock**; post village in Nelson County.
- Deerwood**; ford across Roanoke River in Pittsylvania County.
- Dehaven**; post village in Frederick County.
- Dejarnette**; post village in Caroline County.
- Delaplane**; post village in Fauquier County on the Southern Railway.
- Delaware**; post village in Southampton County on the Seaboard Air Line Railway.
- Delay**; post village in Bedford County.
- Delclisur**; post village in Lee County.
- Delila**; post village in Halifax County.
- Dell**; post village in Grayson County.
- Delos**; post village in Caroline County.
- Delton**; post village in Pulaski County on the Norfolk and Western Railway.
- Democrat**; post village in Lee County.
- Demonet**; post village in Clarke County.
- Denaro**; post village in Amelia County.
- Denbigh**; county seat of Warwick County.
- Dendron**; post village in Surry County on the Surry, Sussex and Southampton Railway.
- Denmark**; post village in Rockbridge County.
- Denniston**; post village in Halifax County on the Norfolk and Western and the Southern railways.
- Denton Valley**; creek, a small left-hand branch of South Fork of Holston River in Washington County.
- Derby**; post village in Prince George County.
- Desert**; sand desert along the eastern coast of Princess Anne County.
- Desha**; post village in Essex County.
- Design**; village in Pittsylvania County.
- Deskin**; mountains in Tazewell County. Elevation, 2,500 feet.
- Deskins**; post village in Buchanan County.
- Detrick**; post village in Shenandoah County.
- Devil**; fork, a small right-hand tributary to Clinch River in Scott County.
- Devils**; creek, a small left-hand branch of Knox Creek, rising in Buchanan County.
- Devils Hole**; mountains in Shenandoah County.
- Devils Knob**; summit in the Blue Ridge in Nelson County.
- Dew**; post village in Middlesex County.
- Dewey**; post village in Wise County.
- Dewitt**; post village in Dinwiddie County on the Seaboard Air Line Railway.
- Dexter**; post village in Russell County.
- Dial Rock**; summit in Buckhorn Mountains.
- Diamondgrove**; post village in Brunswick County.
- Diana Mills**; post village in Buckingham County.
- Diascond**; post village in James City County on the Chesapeake and Ohio Railway.
- Dick**; branch, a small right-hand tributary to Potomac River in Prince William County.
- Dick**; creek, a small tributary to Dry Fork in Tazewell County.
- Dicken**; branch, a small right-hand tributary to New River in Carroll County.
- Dickens**; post village in Goochland County.
- Dickensonville**; village in Russell County.
- Dickerson**; ford of Powell River in Lee County.
- Dickey**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.
- Dickey**; hill in Warren County. Elevation, 1,500 to 2,000 feet.

- Dickenson**; county, located in the western part of the State in the Alleghany Plateau, here deeply dissected. It is drained by Russell Fork of Big Sandy River. The altitude ranges from 1,000 to 3,000 feet above sea level. Area, 297 square miles. Population, 7,747—all white. County seat, Clintwood. The mean magnetic declination in 1900 was 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.
- Dickinson**; post village in Franklin County on the Chesapeake and Ohio Railway.
- Dicks**; creek, a small right-hand tributary to James River in Craig County.
- Dido**; post village in King George County.
- Difficult**; run, a small right-hand branch of Potomac River in Fairfax County.
- Difficult**; run, a small left-hand tributary to Roanoke River in Bedford County.
- Difficult**; village in Fairfax County.
- Diggs**; post village in Mathews County.
- Dilbeck**; post village in Shenandoah County.
- Dillon**; village in Henry County on the Chesapeake and Ohio Railway.
- Dillons Mills**, post village in Franklin County.
- Dillwyn**; post village in Buckingham County on the Chesapeake and Ohio Railway. Altitude, 645 feet.
- Dingley**; post village in Northampton County.
- Dinguid**; post village in Campbell County.
- Dinwiddie**; county, situated in the central part of the State in the Piedmont region, the boundary on the north being in part the Appomattox River. The surface is undulating or rolling. Elevation, 200 or 300 feet above sea level. Area, 521 square miles. Population, 15,374—white, 5,874; negro, 9,500; foreign born, 119. County seat, Dinwiddie. The mean magnetic declination in 1900 was 3° 20'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Seaboard Air Line, the Atlantic Coast Line, and the Norfolk and Western railroads.
- Dinwiddie**; county seat of Dinwiddie County on the Seaboard Air Line Railway.
- Dipsey**; post village in Carroll County.
- Dismal**; creek, a right-hand tributary to Walker Creek, rising in Giles County.
- Dismal**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.
- Dismal**; mountain in Amherst County.
- Dismal**; swamp lying mainly in southeast Virginia, but partly in North Carolina. Its extent is rather indefinite, as its limits can not be sharply defined. Its highest point is 22 feet above sea. It is in part covered with a cypress forest and in part by canebrakes. It is traversed by the Dismal Swamp canal and by numerous smaller ditches. Near the summit is Drummond Lake.
- Dismal Swamp**; canal, running southward through the Dismal Swamp from Deep Creek to Albemarle Sound. It is accompanied throughout by a wagon road.
- Dismal Swamp**; post village in Norfolk County.
- Dispatch**; post village in Powhatan County on the Southern Railway.
- Disputanta**; post village in Prince George County on the Norfolk and Western Railway.
- Diston**; post village in Dinwiddie County.
- Ditchley**; post village in Fairfax County on the Southern Railway.
- Dividing**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Dividing Spring**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Dixie**; post village in Mathews County.
- Dixon**; branch, a small right-hand tributary to New River in Carroll County.
- Dixon**; ford in New River in Carroll County.
- Dixondale**; post village in Gloucester County.
- Dixon Ridge**; summit in Rockingham County.

- Doak**; post village in Tazewell County.
- Dobyn**; post village in Patrick County.
- Dodds**; post village in Stafford County.
- Doddville**; post village in Fauquier County.
- Dodson**; post village in Patrick County.
- Doe**; creek, a small right-hand branch of New River in Giles County.
- Doe**; mountains in Giles County. Elevation, 2,500 to 3,500 feet.
- Doe Branch**; creek, a small left-hand branch of Appomattox River in Cumberland County.
- Doehill**; post village in Highland County.
- Doe Hollow**; gap in Buckhorn Mountains.
- Dog e**; creek, a small right-hand tributary to Potomac River in Fairfax County.
- Dogue**; post village in King George County.
- Dolphin**; post village in Brunswick County.
- Dominion**; village in Halifax County.
- Domino**; post village in Lee County.
- Donald**; summit in Rockbridge County.
- Donaldsburg**; post village in Rockbridge County.
- Dongola**; post village in Louisa County.
- Dooley**; post village in Wise County on the Norfolk and Western Railway.
- Dooms**; post village in Augusta County on the Norfolk and Western Railway.
- Dorcas**; post village in Augusta County.
- Dorchester**; post village in Wise County.
- Dormer**; post village in Carroll County.
- Dorrill**; run, a small right-hand tributary to Potomac River in Prince William and Fauquier counties.
- Dorset**; post village in Powhatan County on the Southern Railway.
- Dory**; post village in Southampton County on the Surry, Sussex and Southampton Railway.
- Doswell**; post village in Hanover County on the Chesapeake and Ohio and the Richmond, Fredericksburg and Potomac railroads.
- Dot**; post village in Lee County.
- Double**; bridges across Meherrin River in Lunenburg County.
- Doublebridge**; post village in Lunenburg County.
- Double Top**; mountain in Madison County. Elevation, 3,000 feet.
- Douglas**; village in Lee County.
- Dover**; creek, a small left-hand branch of James River in Goochland County.
- Dover**; post village in Loudoun County.
- Dover Mines**; post village in Goochland County.
- Dovesville**; post village in Rockingham County.
- Downings**; post village in Richmond County.
- Doyles**; river, a small left-hand tributary to James River in Albemarle County.
- Doylesville**; post village in Albemarle County.
- Dragonville**; post village in King and Queen County.
- Drake**; branch, a small left-hand branch of North Fork of Clinch River in Scott County.
- Drakes Branch**; post village in Charlotte County.
- Dranesville**; post village in Fairfax County.
- Draper**; mountains in Pulaski County. Elevation, 2,500 to 3,000 feet.
- Draper**; mountains in Wythe and Pulaski counties. Elevation, 2,000 to 3,000 feet.
- Draper**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 2,040 feet.
- Drapersville**; post village in Mecklenburg County.
- Dreaming**; creek, a small right-hand branch of James River in Campbell County.



- Dreka**; post village in Accomac County.
- Drenn**; post village in Carroll County.
- Drewry**; bluff in Chesterfield County.
- Drewrys Bluff**; post village in Chesterfield County on the Atlantic Coast Line Railroad.
- Drewryville**; post village in Southampton County on the Southern Railway.
- Driver**; post village in Nansemond County.
- Drum**; marshy point extending into Back Bay in Princess Anne County.
- Drummon**; post village in Craig County.
- Drummond**; lake in Nansemond and Norfolk counties. Elevation above sea level, 22 feet.
- Drummond Hill**; summits in Botetourt and Rockbridge counties.
- Dry**; branch, a small left-hand tributary to James River in Augusta County.
- Dry**; branch, a small left-hand tributary to Powell River in Lee County.
- Dry**; branch, a small left-hand tributary to Shenandoah River in Augusta County.
- Dry**; branch, a small right-hand tributary to James River in Botetourt County.
- Dry**; small left-hand branch of Cripple Creek in Wythe County.
- Dry**; small left-hand branch of New River in Pulaski County.
- Dry**; small left-hand branch of North Fork of Holston River in Smyth County.
- Dry**; small right-hand branch of Roanoke River in Roanoke County.
- Dry**; creek, a small left-hand branch of Appomattox River in Cumberland County.
- Dry**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.
- Dry**; creek, a small right-hand branch of North Fork of Clinch River in Scott County.
- Dry**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.
- Dry**; fork, a small right-hand tributary to Clinch River in Scott County.
- Dry**; fork, a small right-hand tributary to Clinch River in Tazewell County.
- Dry**; fork, a small right-hand tributary to North Fork of Shenandoah River in Rockingham County.
- Dry**; fork, a small right-hand tributary to Wolf Creek in Bland County.
- Dry**; river, a small left-hand tributary to Shenandoah River in Rockingham County.
- Dry**; run, a small left-hand tributary to James River in Alleghany County.
- Dry**; run, a small left-hand tributary to James River in Montgomery County.
- Dry**; run, a small left-hand tributary to North Fork of Roanoke River.
- Dry**; run, a small left-hand tributary to Shenandoah River in Rockingham County.
- Dry**; run, a small right-hand tributary to Shenandoah River in Page County.
- Dry**; run, a small right-hand tributary to Shenandoah River in Rockingham County.
- Dry Branch**; gap in North Mountains in Augusta County.
- Dry Branch**; post village in Pulaski County on the Norfolk and Western Railway.
- Drybridge**; post village in Chesterfield County on the Southern Railway.
- Dryburg**; post village in Halifax County.
- Dryden**; post village in Lee County on the Louisville and Nashville Railroad.
- Dryfork**; post village in Pittsylvania County on the Southern Railway. Altitude, 624 feet.
- Dry Mountain**; summit in Campbell County. Elevation, 770 feet.
- Dry Pond**; mountains in Wythe and Carroll counties. Elevation, 2,500 feet.
- Dry Tripe**; small right-hand branch of Slate Creek in Buchanan County.
- Dublin**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 2,058 feet.
- Ducat**; post village in King George County.
- Duck**; run, a small left-hand tributary to Shenandoah River in Frederick County.
- Ducker**; creek, a small left-hand branch of Appomattox River in Buckingham County.
- Duckinghoe**; creek, a small left-hand tributary to York River in Louisa County.

- Duet**; post village in Madison County.
- Duffield**; town in Scott County. Population, 98.
- Dugspur**; post village in Carroll County.
- Dugwell**; village in Franklin County.
- Duke**; post village in Louisa County.
- Dulany**; post village in Floyd County.
- Dulce**; post village in Albemarle County.
- Dumbarton**; post village in Henrico County.
- Dumfries**; town in Prince William County. Population, 160.
- Dump**; creek, a small right-hand tributary to Clinch River, rising in Russell County.
- Dumpcreek**; post village in Russell County.
- Dun**; post village in Sussex County.
- Dunavant**; post village in Spottsylvania County.
- Dunbrooke**; post village in Essex County.
- Duncan Knob**; summit in Jack Mountain in Bath County.
- Duncans**; post village in Floyd County.
- Duncans Mills**; post village in Scott County.
- Dundee**; post village in Bedford County.
- Dundore**; mountains in Rockingham County. Elevation, 2,500 to 3,000 feet.
- Dungannon**; post village in Scott County.
- Dunlap**; creek, a right-hand branch of Jackson River in Alleghany County.
- Dunlap**; post village in Alleghany County on the Atlantic Coast Line Railroad.
- Dunn Loring**; post village in Fairfax County.
- Dunnsville**; post village in Essex County.
- Dunreath**; post village in Louisa County.
- Duprees**; post village in Charlotte County.
- Durand**; post village in Greenesville County on the Southern Railway.
- Durmid**; post village in Campbell County on the Norfolk and Western and the Southern railways. Altitude, 681 feet.
- Dutch**; post village in Amelia County.
- Dutch Gap**; canal across the neck of James River in Henrico County.
- Dutchman**; branch, a small right-hand tributary to New River in Carroll County.
- Dutoy**; creek, a small right-hand branch of James River in Powhatan County.
- Duty**; post village in Dickinson County.
- Dwale**; post village in Dickinson County.
- Dwight**; post village in Buchanan County on the Norfolk and Western Railway.
- Dwina**; post village in Wise County.
- Dyer Store**; post village in Henry County.
- Eaglerock**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 936 feet.
- Eagle Rock**; summit in Botetourt County.
- Eakin**; post village in Craig County.
- Eanes Crossroads**; post village in Brunswick County.
- Earlehurst**; post village in Alleghany County.
- Earls**; post village in Amelia County.
- Early**; post village in Carroll County.
- Earlygrove**; post village in Scott County.
- Earlysville**; post village in Albemarle County.
- Earnest**; post village in York County.
- East**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- East**; branch, a small right-hand tributary to Jackson River in Highland County.
- East**; fork, a small right-hand tributary to New River in Carroll and Grayson counties.
- Eastend**; post village in Alexandria County.



**Eastham**; post village in Albemarle County.

**East Leake**; post village in Goochland County.

**East Lexington**; post village in Rockbridge County on the Baltimore and Ohio and the Chesapeake and Ohio railroads.

**East Radford**; post village in Montgomery County on the Norfolk and Western Railway.

**East River**; mountains in Giles and Tazewell counties, extending northeast and southwest, bordering on Bland County, Va., and Mercer County, W. Va. Elevation, 3,000 to 4,000 feet.

**East Stone Gap**; town in Wise County. Population, 349.

**Eastview**; post village in Floyd County.

**Eastville**; county seat of Northampton County on New York, Philadelphia and Norfolk Railroad. Population, 313.

**Ebony**; post village in Brunswick County.

**Echols**; ferry over North River, near Glasgow, in Rockbridge County.

**Eckington**; post village in Culpeper County.

**Eddy**; post village in Franklin County.

**Edenburg**; post village in Shenandoah County on the Baltimore and Ohio Railroad. Altitude, 845 feet.

**Edgar**; post village in Caroline County.

**Edgehill**; post village in King George County.

**Edgerton**; post village in Brunswick County.

**Edgewater**; post village in Grayson County.

**Edgewood**; post village in Henry County.

**Edinburg**; town in Shenandoah County on the Southern Railway. Population, 512.

**Edith**; post village in Shenandoah County.

**Edmunds Store**; post village in Brunswick County.

**Edna**; post village in King and Queen County.

**Edom**; post village in Rockingham County.

**Edward Knob**; summit in Carroll County.

**Effna**; post village in Bland County.

**Effy**; post village in Wythe County.

**Eggbornsville**; post village in Culpeper County.

**Eggleston**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,644 feet.

**Eggleston**; springs in Giles County near New River.

**Egmont**; post village in Mecklenburg County.

**Ego**; post village in Floyd County.

**Eheart**; post village in Orange County.

**Ela**; village in Scott County.

**Elamsville**; post village in Patrick County.

**Elba**; post village in Pittsylvania County on the Richmond, Fredericksburg and Potomac Railroad.

**Elbow**; post village in Powhatan County.

**Elder**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Eldridges Mill**; post village in Buckingham County.

**Elect**; village in Pittsylvania County.

**Eliber Spring**; branch, a small right-hand tributary to James River in Craig County.

**Elijah**; post village in Patrick County.

**Elizabeth**; river, an estuary in southeast Virginia formed by the junction of its eastern, southern, and western branches, and opening into Hampton Roads; forms the harbor of Norfolk.

**Elizabeth City**; county, situated in the eastern part of the State in the Atlantic plain north of James River and upon the west shore of Chesapeake Bay. It is low and level. Area, 50 square miles. Population, 19,460—white, 10,757; negro, 8,582; foreign born, 1,909. County seat, Hampton. The mean magnetic declination in 1900 was  $3^{\circ} 55'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Elk**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Elk**; creek, a small left-hand tributary to York River in Louisa County.

**Elk**; creek, a small right-hand branch of New River in Grayson County.

**Elk**; run, a small left-hand branch of Rapidan River in Madison County.

**Elk**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Elk**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Elkcreek**; post village in Grayson County.

**Elk Garden**; post village in Russell County.

**Elk Garden Ridge**; mountains in Russell County. Elevation, 2,500 to 3,000 feet.

**Elkhill**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Elkhorn**; small right-hand branch of New River in Carroll County.

**Elk Horn**; mountain in Augusta County.

**Elk Knob**; summit in Wise County. Elevation, 2,500 feet.

**Elk Lick**; small right-hand tributary to Potomac River in Loudoun County.

**Elko**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Elk Pond**; mountains in Rockbridge County.

**Elkrun**; post village in Fauquier County.

**Elkspur**; post village in Carroll County.

**Elk Spur**; ridge in Carroll County.

**Elkton**; post village in Rockingham County on the Chesapeake Western and the North Western railways. Altitude, 955 feet.

**Elkwood**; post village in Culpeper County on the Southern Railway.

**Ellendale**; post village in Smyth County.

**Ellerson**; post village in Hanover County on the Chesapeake and Ohio Railway.

**Ellett**; post village in Montgomery County.

**Elliott**; creek, a small left-hand tributary to South Fork of Roanoke River in Montgomery County.

**Elliott Knob**; summit of North Mountain in Augusta County. Elevation, 4,473 feet.

**Ellis**; fork, a small right-hand tributary to Appomattox River in Nottoway County.

**Ellis**; post village in Grayson County.

**Elliston**; post village in Montgomery County on the Norfolk and Western Railway.

**Ellisville**; post village in Louisa County.

**Elmeria**; post village in Rockbridge County.

**Elmington**; post village in Nelson County on the Southern Railway. Altitude, 632 feet.

**Elmo**; post village in Halifax County.

**Elmont**; post village in Hanover County.

**Elms**; post village in Sussex County.

**Elm Wood**; creek, a small, right-hand branch of Rappahannock River in Essex County.

**Elmwood**; village in Henry County.

**Elon**; post village in Amherst County.

**Elota**; post village in Carroll County.

**Elsie**; post village in Amherst County.

**Elvan**; post village in Loudoun County.

**Elway**; post village in Russell County.

**Elwood**; post village in Nansemond County.

**Ely**; creek, a small left-hand tributary to Stone Creek in Lee County.

**Emaus**; post village in Bedford County.

**Embrey**; post village in Fauquier County.

**Emmerton**; post village in Richmond County.

**Emmetts**; post village in Hanover County.

**Emory**; post village in Washington County on the Norfolk and Western Railway.  
Altitude, 2,094 feet.

**Emporia**; county seat of Greensville County on the Atlantic Coast Line and the Southern railroads. Population, 3,819.

**Enchanted**; creek, a small left-hand tributary to James River in Amherst County.

**Endicott**; post village in Franklin County.

**Enfield**; post village in King William County.

**England Ridge**; mountains in Amherst County.

**Engleman**; post village in Rockbridge County.

**English**; post village in Franklin County.

**Enoch**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Enoch**; post village in Middlesex County.

**Enoch Knob**; summit in Carroll County. Altitude, 3,022 feet.

**Enon**; post village in Goochland County.

**Enonville**; post village in Buckingham County.

**Enterprise**; post village in Southampton County.

**Entray**; creek, a small left-hand tributary to Roanoke River in Campbell County.

**Eona**; post village in Carroll County.

**Epes**; post village in Lunenburg County.

**Ephesus**; post village in Bedford County.

**Epling**; post village in Giles County.

**Epperly**; post village in Floyd County.

**Epperly Knob**; summit in Floyd County.

**Eppes**; bridge across Appomattox River between Chesterfield and Amelia counties.

**Eppes**; creek, a small left-hand branch of James River in Charles City County.

**Eppes**; island in Charles City County.

**Epps**; creek, a small left-hand tributary to James River in Albemarle County.

**Epworth**; post village in King William County.

**Era**; post village in Dinwiddie County.

**Erald**; post village in Greene County.

**Erica**; post village in Westmoreland County.

**Erin Shades**; post village in Henrico County.

**Ernest**; post village in Tazewell County.

**Esmont**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Essex**; county, situated in the eastern part of the State in the Atlantic plain, bordering on Rappahannock River on the south side. The surface is low and level. Area, 277 square miles. Population, 9,701—white, 3,576; negro, 6,125; foreign born, 10. County seat, Tappahannock. The mean magnetic declination in 1900 was 4° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

**Essie**; post village in Pulaski County.

**Esto**; post village in Henry County.

**Ethel**; post village in Richmond County.

**Etlan**; post village in Madison County.

**Etna Mills**; post village in King William County.

**Etter**; post village in Wythe County.

**Ettricks**; post village in Chesterfield County.

**Eubon**; post village in Lunenburg County.

**Eulalia**; post village in Franklin County.

**Eura**; post village in Page County.

**Eureka Mills**; post village in Charlotte County.

**Evans Wharf**; post village in Accomac County.

**Everets**; post village in Nansemond County.

**Evergreen**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 730 feet.

**Evergreen Mills**; post village in Loudoun County.

**Everona**; post village in Orange County.

**Evington**; post village in Campbell County on the Southern Railway. Altitude, 724 feet.

**Evol**; post village in Campbell County.

**Ewell**; post village in James City County.

**Ewing**; mountains between Wythe and Carroll counties.

**Ewing**; post village in Lee County on the Louisville and Nashville Railroad.

**Exit**; post village in Nansemond County.

**Exmore**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.

**Experiment**; post village in Amherst County.

**Ezell**; post village in Brunswick County.

**Fabers Mills**; post village in Nelson County on the Southern Railway. Altitude, 550 feet.

**Fagg**; post village in Montgomery County.

**Fairfax**; county, situated in the northeastern part of the State in the Piedmont region, bordering on the south bank of Potomac River. Its surface is undulating. Area, 433 square miles. Population, 18,580—white, 13,576; negro, 5,003; foreign born, 413. County seat, Fairfax. The mean magnetic declination in 1900 was  $5^{\circ} 10'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$ . The county is traversed by the Chesapeake and Ohio, the Southern, the Richmond, Frederick and Potomac, and the Arlington and Roundhill Branch railroads.

**Fairfax**; county seat of Fairfax County on the Chesapeake and Ohio and the Southern railways. Population, 373.

**Fairfield**; post village in Rockbridge County on the Baltimore and Ohio Railroad. Altitude, 519 feet.

**Fairoaks**; post village in Accomac County on the Southern Railway.

**Fairport**; post village in Northumberland County.

**Fairview**; post village in Scott County.

**Fairy**; post village in Grayson County.

**Faith**; post village in Buckingham County.

**Falcon**; village in Floyd County.

**Falding**; falls in Spring Creek, in Alleghany County.

**Fall**; run, a small left-hand branch of Rappahannock River in Stafford County.

**Fallcreek Depot**; post village in Pittsylvania County on the Southern Railway. Altitude, 535 feet.

**Fall Hollow**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Falling**; creek, a small left-hand branch of Roanoke River in Bedford County.

**Falling**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Falling**; creek, a small right-hand branch of James River in Chesterfield County.

**Falling**; creek, a small right-hand tributary to James River in Chesterfield County.

**Falling**; river, a small left-hand tributary to Roanoke River in Campbell County.

**Falling**; run, a small left-hand tributary to James River in Rockbridge County.

- Falling Spring**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Fallingwater**; creek, a small right-hand tributary to James River in Botetourt County.
- Falls**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.
- Falls**; run, a small left-hand branch of Rappahannock River in Stafford County.
- Falls Church**; town in Fairfax County on the Southern Railway. Population, 1,007.
- Falls Hill**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.
- Falls Mills**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,323 feet.
- Fallville**; post village in Grayson County.
- Falmouth**; post village in Stafford County.
- False**; cape on sand bar on the Atlantic coast in Princess Anne County. A life-saving station is located there.
- Fan**; mountains in Albemarle County. Elevation, 1,000 to 1,500 feet.
- Fancy**; gap in mountains in Patrick County.
- Fancygap**; post village in Carroll County.
- Fancyhill**; post village in Rockbridge County.
- Fanshaw**; post village in Hanover County.
- Fantine**; post village in Pittsylvania County.
- Fariston**; post village in Charlotte County.
- Farland**; post village in Roanoke County.
- Farmer**; mountains in Carroll County. Elevation, 2,500 feet.
- Farmers Fork**; post village in Richmond County.
- Farmville**; county seat of Prince Edward County on the Farmville and Powhatan and the Norfolk and Western railroads. Population, 2,471.
- Farnham**; post village in Richmond County.
- Farr**; post village in Fairfax County.
- Farrar**; island, surrounded by James River and the Dutch Gap canal.
- Farrington**; post village in Hanover County.
- Farris**; village in Washington County.
- Fauquier**; county, situated in the northern part of the State in the Piedmont region, with the summit of the Blue Ridge as its northwestern boundary. The southern part has a rolling surface, breaking up in the northern part into short ridges and the spurs of the Blue Ridge. The altitude ranges from 200 to 3,000 feet. Area, 676 square miles. Population, 23,374—white, 15,074; negro, 8,298; foreign born, 175. County seat, Warrenton. The mean magnetic declination in 1900 was 3° 45'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 55°. The county is traversed by the Southern Railway.
- Fauquier Springs**; post village in Fauquier County.
- Favonia**; post village in Wythe County.
- Favor**; post village in King and Queen County.
- Fawcett**; gap in Little North Mountains.
- Fawcettgap**; post village in Frederick County.
- Fawn**; small left-hand branch of Straight Creek in Lee County.
- Faye**; post village in Prince Edward County.
- Feedstone**; mountains in Rockingham County. Elevation, 3,500 feet.
- Felden**; post village in Prince Edward County.
- Felicia**; post village in Franklin County.
- Felt Knob**; summit in Carroll County. Elevation, 3,216 feet.
- Felts**; post village in Southampton County.
- Fentriss**; post village in Norfolk County.

**Fergusonville**; post village in Nottoway County.

**Fergussons Wharf**; post village in Isle of Wight County.

**Fernalda**; post village in Wise County.

**Ferrol**; post village in Augusta County on the Chesapeake and Ohio Railway.  
Altitude, 1,810 feet.

**Ferrum**; post village in Franklin County on the Norfolk and Western Railway.  
Altitude, 1,237 feet.

**Festoon**; post village in Dickenson County.

**Fetzer**; gap in Little North Mountain in Shenandoah County.

**Fiddler**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Fido**; post village in Scott County.

**Fiery**; run, a small left-hand tributary to Rappahannock River in Rappahannock County.

**Fields**; post village in Mecklenburg County.

**Fife**; post village in Goochland County.

**Fifteen Mile**; creek, a small right-hand branch of South Fork of Holston River in Washington County.

**Fig**; post village in Lee County.

**Fighting**; creek, a small left-hand branch of Appomattox River in Powhatan County.

**Figsboro**; post village in Henry County.

**Fincastle**; county seat of Botetourt County. Population, 652. Altitude, 1,250 feet.

**Finchley**; post village in Mecklenburg County on the Southern Railway.

**Findlay**; mountains in Nelson County. Elevation, 1,000 feet.

**Fine**; creek, a small right-hand branch of James River in Powhatan County.

**Finecreek Mills**; post village in Powhatan County.

**Finley**; creek, a small left-hand branch of North Fork of Holston River in Washington County.

**Finley**; post village in Grayson County.

**Finney**; post village in Accomac County on the Norfolk and Western Railway.

**Finneys Siding**; post village in Russell County.

**Finneywood**; post village in Mecklenburg County on the Southern Railway.

**First**; mountains in Page County. Elevation, 1,500 to 2,000 feet.

**Fisher**; small right-hand branch of Cripple Creek in Wythe County.

**Fisherman**; post village in Lancaster County.

**Fishers**; gap in the Blue Ridge, caused by Robertson River, in Madison County.

**Fishers Hill**; post village in Shenandoah County on the Southern Railway.

**Fishersville**; post village in Augusta County on the Chesapeake and Ohio Railway.  
Altitude, 1,320 feet.

**Fishing**; creek, a small right-hand branch of Roanoke River in Campbell County.

**Fishing**; point in Isle of Wight County, extending into James River.

**Fish Pond**; creek, a small left-hand tributary to Appomattox River in Appomattox County.

**Fitchetts**; post village in Mathews County.

**Fitzhugh**; post village in Brunswick County.

**Fiveforks**; post village in Prince Edward County.

**Fiveoaks**; post village in Tazewell County on the Norfolk and Western Railway.  
Altitude, 2,468 feet.

**Flag**; rocks in Warm Spring Mountain in Bath County.

**Flagpond**; post village in Scott County.

**Flanagans Mills**; post village in Cumberland County.

**Flat**; creek, a small left-hand tributary to Roanoke River in Campbell County.

**Flat**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Flat**; run, a small right-hand tributary to Rappahannock River in Orange County.



**Flatridge**; post village in Grayson County.

**Flat Rock**; creek, a small right-hand tributary to Clinch River in Russell County.

**Flatrock**; post village in Scott County on the Farmville and Powhatan Railroad.

**Flatrun**; post village in Orange County.

**Flat Top**; mountains in Bland and Giles counties. Elevation, 2,000 to 3,500 feet.

**Flat Top**; summit in the central part of Bedford County. Elevation, 1,978 feet.

**Flat Top**; summit in the Peaks of Otter Mountains in the northern part of Bedford County. Elevation, 4,000.

**Flatwoods**; branch, a small left-hand tributary to Roanoke River.

**Flatwoods**; post village in Scott County.

**Flax**; post village in Dinwiddie County.

**Fleenors**; post village in Washington County.

**Fleet**; post village in Washington County.

**Flem**; post village in Patrick County.

**Fleming**; mountain in Bedford County. Elevation, 2,000 feet.

**Fletcher**; post village in Greene County.

**Flint**; post village in Floyd County.

**Flint**; run, a small right-hand tributary to Shenandoah River in Warren County.

**Flinthill**; post village in Rappahannock County.

**Flint Hill**; summit in Franklin County.

**Floris**; post village in Fairfax County.

**Floyd**; county, situated in the southern part of the State upon a summit of the Blue Ridge, here having the form of a plateau with the escarpment to the southeast. The surface consists of an undulating and broken country, drained by South Fork of Roanoke River. The altitude ranges from 2,000 to over 3,000 feet above sea level. Area, 383 square miles. Population, 15,388—white, 14,313; negro, 1,075; foreign born, 4. County seat, Floyd. The mean magnetic declination in 1900 was  $4^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ .

**Floyd**; county seat of Floyd County. Population, 402.

**Flumen**; post village in Rockbridge County.

**Fluvanna**; county, situated in the central part of the State in the Piedmont region.

It is traversed by Ravanna River, while the James forms its southern boundary. The surface is undulating; it is elevated 250 to 500 feet above sea level. Area, 289 square miles. Population, 9,050—white, 5,039; negro, 4,011; foreign born, 18. County seat, Palmyra. The mean magnetic declination in 1900 was  $3^{\circ}$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Fly**; post village in Halifax County.

**Fodder House**; summit in Black Creek Mountains in Bath County.

**Folly Mills**; post village in Augusta County on the Baltimore and Ohio Railroad.

**Foneswood**; post village in Westmoreland County.

**Fontella**; post village in Bedford County.

**Forbes**; post village in Buckingham County.

**Ford**; bridge across Chickahominy River in Hanover County.

**Ford**; post village in Dinwiddie County on the Norfolk and Western Railway.

**Fore**; mountains in Alleghany County. Elevation, 2,500 feet.

**Foremans**; run, a small left-hand tributary to Shenandoah River in Frederick County.

**Foremost**; run, a small left-hand tributary to York River in Spotsylvania County.

**Fores Store**; post village in Appomattox County.

**Forestburg**; post village in Prince William County.

**Forest Depot**; post village in Bedford County on the Norfolk and Western Railway and the Baltimore and Ohio railroads. Altitude, 863 feet.

**Foresthill**; post village in Brunswick County.

**Forestville**; post village in Shenandoah County on the Southern Railway.

**Forge**; post village in Dinwiddie County.

**Fork**; mountains in Giles County. Elevation, 2,500 to 4,000 feet.

**Fork**; mountains in Greene County. Elevation, 2,000 to 3,000 feet.

**Forkland**; post village in Nottoway County.

**Fork Mountain**; summit in Amherst County. Elevation, 2,000 to 2,500 feet.

**Forks of Buffalo**; post village in Amherst County.

**Forks ville**; post village in Mecklenburg County.

**Fork Union**; post village in Fluvanna County.

**Formosa**; post village in Charlotte County.

**Fort**; valley between Massanutten, Powells, and Three Top mountains.

**Fort Blackmore**; post village in Scott County.

**Fort Defiance**; post village in Augusta County on the Baltimore and Ohio Railroad. Altitude, 1,247 feet.

**Fort Hoover**; village in Rockingham County.

**Fort Lee**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Fort Lewis**; mountains in Roanoke County. Elevation, 1,500 to 3,800 feet.

**Fort Lewis**; post village in Bath County.

**Fort Mitchell**; post village in Lunenburg County.

**Fort Monroe**; military post in Elizabeth City County, at Old Point Comfort, on Hampton Roads, opposite Norfolk.

**Fort Myer**; military post and county seat in Alexandria County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Foster**; post village in Mathews County.

**Foster Knob**; summit in Bedford County. Elevation, 2,576 feet.

**Fosters Falls**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 1,960 feet.

**Fostoria**; post village in Alexandria County on the Southern Railway.

**Fountains**; creek, a small right-hand branch of Meherrin River in the southeastern part of the State.

**Four Mile**; run, a small right-hand branch of Potomac River in Alexandria County.

**Fowler**; village in Washington County.

**Fowlers**; small left-hand branch of North Fork of Holston River, rising in Scott County.

**Fox**; creek, a small right-hand branch of New River in Grayson County.

**Fox**; post village in Grayson County.

**Fox Knob**; summit in Grayson County. Elevation, 3,500 feet.

**Francisco**; post village in Craig County.

**Francis Mill**; creek, a small left-hand branch of Cripple Creek in Wythe County.

**Frank**; branch, a small left-hand tributary to Appomattox River in Chesterfield County.

**Frank**; branch, a small right-hand tributary to James River in Chesterfield County.

**Franklin**; county, situated in the southern part of the State in the upper portion of the Piedmont plain, including the escarpment of the ridge. The altitude ranges from 1,000 to 3,500 feet. Area, 690 square miles. Population, 25,953—white, 20,005; negro, 5,947; foreign born, 4. County seat, Rockymount. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.

**Franklin**; creek, a small left-hand tributary to James River in Amherst County.

**Franklin**; town in Southampton County on the Seaboard Air Line and the Southern railways. Population, 1,143.



- Franklin City**; post village in Accomac County on the Philadelphia, Baltimore and Washington Railroad.
- Franktown**; post village in Northampton County.
- Fray**; post village in Madison County.
- Fred**; post village in Floyd County.
- Frederick**; county, situated in the northern part of the State in the Appalachian Valley; its surface is mainly a rolling plain, but intersected by a number of minor ridges, separated by limestone valleys; the altitude ranges from 500 to 2,500 feet, that elevation being found on the Great North Mountain and in the western part of the county. Area, 425 square miles. Population, 13,239—white 12,486; negro, 753; foreign born, 84. County seat, Winchester. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Baltimore and Ohio and the Cumberland Valley railroads.
- Fredericksburg**; city in Spottsylvania County, but independent in government, on the Potomac, Fredericksburg and Piedmont and the Richmond, Fredericksburg and Potomac railroads. Population, 5,068.
- Fredericks Hall**; post village in Louisa County on the Chesapeake and Ohio Railway.
- Freeda**; post village in Pulaski County.
- Freedom Hill**; summit in Fairfax County.
- Freeling**; post village in Dickinson County.
- Freeman**; post village in Brunswick County on the Chesapeake and Ohio Railway.
- Freemason**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Freeport**; post village in Gloucester County.
- Frèeshade**; post village in Middlesex County.
- Freestone**; point on Potomac River in Prince William County.
- Free Union**; post village in Albemarle County.
- French Hay**; post village in Hanover County.
- Fresh**; pond in eastern part of Princess Anne County.
- Freshwater**; post village in Nelson County.
- Fiar**; post village in Amherst County.
- Friar**; summit in Amherst County.
- Fridley**; gap in Massanutten Mountain.
- Friedens**; village in Rockingham County.
- Friendship**; post village in Washington County.
- Friends Mission**; post village in Patrick County.
- Fries**; post village in Grayson County on the Norfolk and Western Railway.
- Fritts**; village in Lee County.
- Front Royal**; county seat of Warren County on the Norfolk and Western and the Southern railways. Altitude, 546 feet. Population, 1,005.
- Frost**; post village in Rappahannock County.
- Fruitley**; post village in Albemarle County.
- Fry**; post village in Henry County.
- Fryingpan**; creek, a small left-hand branch of Russell Fork, rising in Dickenson County.
- Fugates Hill**; post village in Russell County.
- Fulks Run**; post village in Rockingham County.
- Fullhardt Knob**; summit in Botetourt County. Elevation, 2,329 feet.
- Fultz**; river, a small right-hand tributary to Shenandoah River in Page County.
- Funt**; creek, a small right-hand branch of Russell Fork, rising in Buchanan County.
- Furnace**; post village in Rockingham County on the Potomac, Fredericksburg and Piedmont Railroad.

- Furnace**; branch, a small left-hand tributary to Shenandoah River in Frederick County.
- Furnace**; branch, a small right-hand tributary to James River in Botetourt County.
- Gage**; post village in Floyd County.
- Gainesboro**; post village in Frederick County.
- Gaines Crossroads**; post village in Rappahannock County.
- Gaines Mill**; pond at head of Powhite Creek, a small left-hand branch of Chickahominy River in Hanover County.
- Gainesville**; post village in Prince William County on the Southern Railway.
- Gala**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 938 feet.
- Galfred**; gap, caused by a left-hand tributary to James River in Alleghany Front Mountains in Highland County.
- Galts Mills**; post village in Amherst County.
- Galveston**; post village in Pittsylvania County on the Southern Railway.
- Gambette**; post village in Carroll County on the Norfolk and Western Railway.
- Gambrill**; post village in Fairfax County.
- Gap**; mountains in Giles County. Elevation, 2,000 to 2,500 feet.
- Gap**; run, a small right-hand branch of Potomac River in Fauquier County.
- Gap**; run, a small right-hand tributary to Potomac River in Frederick County.
- Gap**; run, a small right-hand branch of Shenandoah River in Rockingham County.
- Gaprun**; post village in Frederick County.
- Gap Store**; post village in Tazewell County.
- Garden**; fork, a small left-hand branch of Levisa Fork, rising in Buchanan County.
- Garden**; mountains in Tazewell and Bland counties. Elevation, 3,000 to 4,000 feet.
- Gardenia**; post village in Prince Edward County.
- Garden Mountain**; summit in Botetourt County.
- Gardners**; post village in Russell County on the Norfolk and Western Railway.
- Garfield**; post village in Fairfax County.
- Gargatha**; post village in Accomac County.
- Garnard**; small right-hand branch of Roanoke River in Roanoke County.
- Garners**; creek, a small left-hand tributary to Yadkin River, rising in Patrick County.
- Garrett**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.
- Garrett**; post village in Buckingham County.
- Garrison**; ford in New River in Grayson County.
- Garrisonville**; post village in Stafford County.
- Garth**; post village in Albemarle County.
- Gary**; post village in Lunenburg County.
- Garysville**; post village in Prince George County.
- Gasburg**; post village in Brunswick County.
- Gaskins**; post village in Greensville County.
- Gaspards**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.
- Gate City**; county seat of Scott County on the Virginia and Southwestern Railway. Population, 521.
- Gatewood**; post village in Spottsylvania County.
- Gatlion**; branch, a small left-hand tributary to James River in Montgomery County.
- Gayle**; post village in Scott County.
- Gaylord**; post village in Clarke County.
- Gays**; post village in Louisa County.
- Gayton**; post village in Henrico County.
- Gee**; post village in Prince George County.

**Genito**; creek, a small left-hand branch of James River in Goochland County.

**Genito**; post village in Powhatan County.

**Genoa**; post village in Rockingham County.

**George**; creek, a small left-hand tributary to Russell Fork, rising in Dickenson County.

**George**; creek, a small right-hand branch of Pound River, rising in Dickenson County.

**Georgel**; post village in Wise County.

**Georges**; run, a small left-hand branch of South Fork of Roanoke River in Montgomery County.

**Georges Mill**; post village in Loudoun County.

**Gera**; post village in King George County.

**German**; river, a small right-hand tributary to Shenandoah River in Rockingham County.

**German**; river, a small left-hand tributary to Shenandoah River in Rockingham County.

**Germania**; ford across Rapidan River in Culpeper County.

**German Ridge**; mountains in Madison County. Elevation, 1,000 to 1,500 feet.

**Gertie**; post village in Norfolk County.

**Getz**; post village in Shenandoah County.

**Gholsonville**; post village in Brunswick County.

**Gibson Hill**; summit in Augusta County.

**Gibson Knob**; summit in Carroll County. Elevation, 3,036.

**Gibson Station**; post village in Lee County on the Chesapeake and Ohio Railway.

**Gibsonville**; post village in Russell County.

**Gidsville**; post village in Amherst County.

**Giffraff**; post village in Charlotte County.

**Gig**; post village in Lunenburg County.

**Giles**; county, situated in the western part of the State in the Appalachian Valley.

Its surface consists of sandstone ridges separated by limestone valleys. It is crossed by New River and drained by that stream and its tributaries. The altitude ranges from 1,500 to 4,400 feet above sea level. Area, 349 square miles. Population, 10,793—white, 9,994; negro, 799; foreign born, 22. County seat, Pearisburg. The mean magnetic declination in 1900 was  $2^{\circ} 55'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western and the Big Star railways.

**Gillaspie**; post village in Bedford County on the Norfolk and Western Railway. Altitude, 2,254 feet.

**Gilliamsville**; post village in Buckingham County.

**Gillis**; creek, a small left-hand branch of James River in Henrico County.

**Gills**; creek, a small head branch of Meherrin River, rising in Charlotte County.

**Gills**; creek, a small right-hand tributary to Roanoke River in Franklin County.

**Gills**; post village in Amelia County on the Southern Railway.

**Gilman**; post village in Hanover County.

**Gilmerton**; post village in Norfolk County on the Norfolk and Western Railway.

**Gilmores Mills**; post village in Rockbridge County on the Chesapeake and Ohio Railway.

**Gin**; creek, a small left-hand branch of Straight Creek in Lee County.

**Glade**; creek, a small left-hand tributary to New River in Wythe County.

**Glade**; creek, a small left-hand tributary to Roanoke River in Roanoke and Botetourt counties.

**Glade**; creek, a small right-hand tributary to New River in Carroll County.

**Gladehill**; post village in Franklin County on the Southern Railway.

**Gladesboro**; post village in Carroll County.

**Glade Spring**; town in Washington County on the Norfolk and Western Railway. Altitude, 2,074 feet. Population, 304.

- Gladeville**; town in Wise County on the Norfolk and Western and the Virginia and Kentucky railways. Altitude, 2,474 feet. Population, 511.
- Gladstone**; post village in Nelson County on the Chesapeake and Ohio Railway.
- Glady**; fork, a small right-hand tributary to New River in Grayson County.
- Glady**; run, a small right-hand tributary to Mattaponi River in Spottsylvania County.
- Gladys**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 770 feet.
- Glasgow**; post village in Rockbridge County on the Chesapeake and Ohio and the Norfolk and Western railways.
- Glass**; post village in Gloucester County.
- Glenallen**; post village in Henrico County on the Richmond, Fredericksburg and Potomac Railroad. Altitude, 855 feet.
- Glenbrook**; post village in Fairfax County.
- Glencarlyn**; post village in Alexandria County on the Southern Railway.
- Glendale**; post village in Henrico County.
- Glendower**; post village in Albemarle County.
- Glendoyle**; post village in Dinwiddie County.
- Glenfall**; post village in Appomattox County.
- Glenford**; post village in Washington County.
- Glenland**; post village in Pittsylvania County.
- Glenlyn**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,520 feet.
- Glenmore**; post village in Buckingham County.
- Glenns**; post village in Gloucester County.
- Glenora**; post village in Spottsylvania County.
- Glenvar**; post village in Roanoke County on the Norfolk and Western Railway.
- Glen Wilton**; post village in Botetourt County on the Chesapeake and Ohio Railway.
- Globe**; post village in King William County.
- Glory**; post village in Madison County.
- Gloucester**; county, situated in the eastern part of the State on the Atlantic plain on the north side of York River, at its mouth, and the west side of Chesapeake Bay; it is but little elevated above tide. Area, 253 square miles. Population, 12,832—white, 6,224; negro, 6,608; foreign born, 14. County seat, Gloucester. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.
- Gloucester**; county seat of Gloucester County.
- Gloucester Point**; post village in Gloucester County.
- Glove**; post village in Lunenburg County.
- Goblintown**; post village in Patrick County.
- Goby**; post village in King George County.
- Godfrey**; post village in Culpeper County.
- Goffs**; post village in Bedford County.
- Gogginsville**; village in Franklin County.
- Golansville**; post village in Caroline County.
- Golddale**; post village in Orange County.
- Golden Spring**; post village in Buchanan County.
- Goldenvale**; creek, a small right-hand branch of Rappahannock River in Caroline County.
- Goldhill**; post village in Buckingham County. Altitude, 540 feet.
- Gold Mine**; creek, a small left-hand tributary to York River in Louisa County.
- Goldvein**; post village in Fauquier County.
- Gondola**; post village in Buckingham County.

**Goochland**; county, situated in the central part of the State in the Piedmont region. It is drained by James River, which forms its southern boundary. The altitude ranges from 200 to 400 feet. Area, 296 square miles. Population, 9,519—white, 3,961; negro, 5,558; foreign born, 30. County seat, Goochland. The mean magnetic declination in 1900 was  $3^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Goochland**; county seat of Goochland County.

**Goodall**; post village in Hanover County.

**Goode**; bridge across Appomattox River between Chesterfield and Amelia counties.

**Goode**; creek, a small left-hand branch of Appomattox River in Chesterfield County.

**Goode**; creek, a small right-hand branch of James River in Chesterfield County.

**Goodes**; post village in Bedford County on the Norfolk and Western Railway.

**Goodes Ferry**; post village in Mecklenburg County.

**Goodloes**; post village in Spottsylvania County.

**Goodman**; post village in Roanoke County.

**Goods Mills**; post village in Rockingham County.

**Goods Mountain**; summit in Rockingham County.

**Goodview**; post village in Bedford County.

**Goodwin**; bridge across Stoney Creek in Dinwiddie County.

**Goodwin**; post village in Spottsylvania County.

**Goodwins**; ferry across New River in Giles County.

**Goodwins Ferry**; post village in Giles County.

**Goodwynsville**; post village in Dinwiddie County.

**Gooneys**; creek, a small right-hand tributary to Shenandoah River in Warren County.

**Goose**; creek, a left-hand branch of Roanoke River, formed by two forks, North and South, in Bedford County.

**Goose**; creek, a right-hand branch of Potomac River in Loudoun County.

**Goose**; creek, a small right-hand tributary to Potomac River in Rappahannock County.

**Goose**; creek, a small right-hand tributary to Potomac River in Fauquier and Loudoun counties.

**Goose**; creek, a small right-hand tributary to Shenandoah River in Augusta County.

**Gordonsville**; town in Orange County on the Chesapeake and Ohio Railway. Population, 603.

**Gore**; post village in Frederick County.

**Goshen**; town in Rockbridge County on the Chesapeake and Ohio and the Rockbridge Alum Springs and Victoria and Western railroads. Altitude, 1,410 feet. Population, 253.

**Goshen Bridge**; post village in Rockbridge County.

**Gossan**; post village in Carroll County.

**Gouldin**; post village in Hanover County.

**Grace**; post village in Princess Anne County.

**Gracepoint**; post village in Lancaster County.

**Grady**; fork, a small left-hand fork of Mountain Fork in Scott County.

**Grady**; post village in Pittsylvania County.

**Grafton**; post village in York County.

**Graham**; branch, a small right-hand tributary to New River in Wythe County.

**Graham**; creek, a small left-hand tributary to James River in Amherst County.

**Graham**; town in Tazewell County on the Norfolk and Western Railway. Altitude, 2,387 feet. Population, 1,554.

**Grahams Forge**; post village in Wythe County. Altitude, 2,387 feet.

**Grangeville**; post village in Accomac County.

**Granite**; post village in Chesterfield County on the Chesapeake and Ohio and the Southern railways.

**Granite Springs**; post village in Spottsylvania County.

**Grannys**; run, a small right-hand tributary to James River in Craig County.

**Grant**; post village in Grayson County.

**Grantland**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Grape**; post village in Accomac County.

**Grapefield**; post village in Bland County.

**Grapelawn**; village in Nelson County.

**Grape Vine**; bridge across the Chickahominy River in Hanover County.

**Grassfield**; post village in Norfolk County.

**Grassland**; post village in Orange County.

**Grassy**; creek, a small left-hand tributary to Clinch River, rising in Russell County.

**Grassy**; creek, a small right-hand branch of Roanoke River in North Carolina and southern Virginia.

**Grassy**; creek, a small right-hand branch of Levisa Fork in Buchanan County.

**Grassy**; creek, a small right-hand tributary to New River in Carroll County.

**Grassy Hill**; summit in Franklin County. Elevation, 1,968 feet.

**Grassy**; mount in Rockbridge County.

**Grattan Hill**; summit in Rockingham County. Elevation, 1,500 feet.

**Gratton**; post village in Tazewell County.

**Gravelhill**; post village in Buckingham County.

**Gravelly**; small right-hand branch of Roanoke River in Pittsylvania and Franklin counties.

**Gravelly**; run, a small left-hand tributary to Nottoway River in Dinwiddie County.

**Gravelly**; run, a small right-hand branch of Rowanty Creek in Dinwiddie County.

**Gravel Spring**; post village in Frederick County.

**Graves Mill**; post village in Madison County.

**Gray**; small right-hand branch of Maiden Spring Creek, a tributary to Clinch River, in Tazewell County.

**Gray**; post village in Sussex County.

**Grays**; a small right-hand branch of Cripple Creek in Wythe County.

**Grayson**; county, situated in the southern part of the State along the North Carolina boundary. It is bounded on the north by Iron Mountain. Its surface is broken, and it is drained by New River. The altitude ranges from 3,000 to over 4,000 feet. Area, 438 square miles. Population, 16,853—white, 15,894; negro, 959; foreign born, 7. County seat, Independence. The mean magnetic declination in 1900 was 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.

**Grayson**; post village in Carroll County on the Norfolk and Western Railway.

**Graysville**; post village in Floyd County.

**Greasy**; creek, a small right-hand tributary to New River in Floyd and Carroll counties.

**Great**; run, a small left-hand branch of Rappahannock River in Fauquier County.

**Great**; branch, a small right-hand tributary to James River in Chesterfield County.

**Great**; run, a small right-hand tributary to Rappahannock River in Madison County.

**Greatbridge**; post village in Norfolk County.

**Greatfalls**; post village in Fairfax County.

**Great Knobs**; summits in Washington County along the bank of Holston River.

**Great Narrows**; passage between Marshy Islands connecting North and Back bays in Princess Anne County.

**Great North**; mountain on west side of Shenandoah Valley. Elevation, 2,000 to 4,000 feet.



**Greek**; post village in Grayson County.

**Green**; creek, a small left-hand branch of Appomatox River in Cumberland County.

**Green**; creek, a small left-hand tributary to James River in Albemarle County.

**Green**; marshy point on North Landing River in Princess Anne County.

**Green**; mountain in Bedford County. Elevation, 1,500 to 1,747 feet.

**Green**; mountain in Page County.

**Green**; mountains in Albemarle County. Elevation, 500 feet.

**Greenbackville**; post village in Accomac County.

**Greenbay**; post village in Prince Edward County on the Southern Railway. Altitude, 589 feet.

**Greenbrier**; fork, a small right-hand tributary to Russell Fork, rising in Buchanan County.

**Greencove**; post village in Washington County.

**Green Cove**; small left-hand branch of White Top Creek, tributary to South Fork of Holston River, cutting into Stone Mountain.

**Greendal** ; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Greendale**; post village in Washington County.

**Greendun**; post village in Halifax County.

**Greene**; county, situated in the central part of the State in the Piedmont region, stretching from the Rapidan River to the summit of the Blue Ridge. The southeastern part of the county is undulating, while the remainder is occupied by heavy spurs of the Blue Ridge. The altitude is from 500 feet at Rapidan River to 2,400 feet at High Knob on the Blue Ridge. Area is 150 square miles. Population, 6,214—white, 4,783; negro, 1,431; foreign born, 2. County seat, Stanardsville. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the temperature 50° to 55°.

**Greensville**; county, located in the southern part of the State on the Atlantic plain, bordering on North Carolina. It has a rolling surface, and but little elevated above the sea. Area is 288 square miles. Population, 9,758—white, 3,402; negro, 6,356; foreign born, 51. County seat, Emporia. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line and the Southern railroads.

**Greenfield**; post village in Nelson County.

**Green Hill**; ferry across Roanoke River in Halifax County.

**Green Hill**; mountains in Rockbridge County.

**Greenlaws Wharf**; post village in King George County.

**Greenlee**; post village in Rockbridge County on the Chesapeake and Ohio Railway.

**Greenmount**; post village in Rockingham County.

**Green Mountain**; summit in Albemarle County.

**Greenplains**; post village in Greensville County on the Southern Railway.

**Green Ridge**; mountains in Botetourt County. Elevation, 1,500 to 2,453 feet.

**Green Sea**; marsh forming a part of Dismal Swamp.

**Green Spring**; run, a small right-hand tributary to Potomac River in Frederick County.

**Greens Knob**; summit in Bedford County. Elevation, 2,563 feet.

**Greenspring Depot**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 529 feet.

**Green Valley**; post village in Bath County.

**Greenville**; post village in Augusta County on the Baltimore and Ohio and the Norfolk and Western railroads. Altitude, 1,547 feet.

**Greenway**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Greenwich**; post village in Prince William County on the Norfolk and Southern Railroad.

- Greenwood Depot**; post village in Albemarle County on the Chesapeake and Ohio Railway.
- Greers**; ford across Roanoke River in Bedford County.
- Greyburn**; post village in Buckingham County.
- Greystone**; village in Henry County.
- Gridley**; post village in Shenandoah County.
- Griffinsburg**; post village in Culpeper County.
- Griffith**; post village in Bath County on the Chesapeake and Ohio Railway.
- Griffith Knob**; summit in Bland County. Altitude, 3,773 feet.
- Grigsby**; post village in King George County.
- Grimes**; creek, a small right-hand branch of Roanoke River in Franklin County.
- Grimes**; post village in Frederick County.
- Grimstead**; post village in Mathews County.
- Grindall**; creek, a small right-hand branch of James River in Chesterfield County.
- Grinels**; post village in Middlesex County.
- Grindstone**; mountains in Page County. Elevation, 1,500 to 2,500 feet.
- Grindstone**; summit in Augusta County.
- Grizzard**; post village in Sussex County on the Southern Railway.
- Grizzle**; post village in Dickenson County.
- Grose**; creek, a small left-hand branch of South Fork of Holston River in Washington County.
- Groseclose**; post village in Smyth County.
- Grosses**; post village in Smyth County.
- Grotons**; post village in Accomac County.
- Grottoes**; post village in Rockingham County on the Norfolk and Western Railway.
- Grove**; post village in York County on the Chesapeake and Ohio Railway.
- Grovehill**; post village in Page County on the Norfolk and Western Railway. Altitude, 963 feet.
- Grundy**; county seat of Buchanan County. Population, 200. Altitude, 1,065 feet.
- Guess**; fork, a small right-hand branch of Knox Creek, rising in Buchanan County.
- Guest**; river, a small right-hand branch of Clinch River, rising in Wise County.
- Guilford**; post village in Accomac County on the Southern Railway.
- Guinea**; mountains in Giles County.
- Guinea Mills**; post village in Cumberland County.
- Guineys**; post village in Caroline County.
- Gulley Mountain**; summit in Botetourt County.
- Gumspring**; post village in Louisa County.
- Gun Mountain**; summit in Amherst County.
- Gunahill**; post village in Dinwiddie County.
- Gunston**; post village in Fairfax County.
- Gunston Cove**; an arm of the Potomac River, in the southern part of Fairfax County, into which enter Accotink and Pohick bays.
- Guy**; post village in Mecklenburg County.
- Guynn**; post village in Mathews County.
- Guys**; run, a small left-hand tributary to James River in Bath and Rockbridge counties.
- Gwathmey**; station in Hanover County, on the Richmond, Fredericksburg and Potomac Railroad.
- Gypsum**; post village in Smyth County on the Norfolk and Western Railway.
- Gypsy**; post village in Mecklenburg County.
- Haddonfield**; post village in Wise County.
- Hadens**; post village in Botetourt County on the Chesapeake and Ohio Railway.
- Hadensville**; post village in Goochland County.
- Hadlock**; post village in Northampton County.
- Hagan**; post village in Lee County on the Louisville and Nashville Railroad.



- Hagood**; post village in Patrick County.
- Hague**; post village in Westmoreland County.
- Haislets**; creek, a small right-hand tributary to James River in Rockbridge County.
- Hale**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Haleford**; post village in Franklin County.
- Hales**; bridge across Roanoke River in Franklin County.
- Hales**; creek, a small left-hand branch of Roanoke River in Bedford County.
- Hales Mill**; post village in Scott County.
- Halfway**; post village in Fauquier County.
- Halifax**; county, located on the southern boundary of the State, the northern and eastern boundaries following the Roanoke River. It is situated in the Piedmont region, and its surface is undulating, with little relief. The altitude rises from about 300 feet to 600 feet above sea level. Area, 806 square miles. Population, 37,197—white, 17,922; negro, 19,275; foreign born, 102. County seat, Houston. The mean magnetic declination in 1900 was  $2^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.
- Hallieford**; post village in Mathews County.
- Hallowing**; point on Potomac River in Fairfax County.
- Hallsboro**; post village in Chesterfield County on the Southern Railway.
- Hallwood**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.
- Halsteads Point**; post village in York County.
- Hamburg**; post village in Shenandoah County.
- Hamilton**; town in Loudoun County on the Southern Railway. Population, 364.
- Hamilton Draft**; small left-hand tributary to James River in Augusta County.
- Hamilton Knob**; summit in Draper Mountains. Elevation, 3,163.
- Hammet**; post village in Bedford County.
- Hampden Sidney**; post village in Prince Edward County.
- Hampstead**; post village in King George County.
- Hampton**; county seat of Elizabeth City County on the Chesapeake and Ohio Railway.
- Hampton Roads**; harbor at mouth of James River, by which the latter is connected with Chesapeake Bay. It lies between Newport News and Fort Monroe on the north and the shore about Norfolk Harbor on the south.
- Handsom**; post village in Southampton County on the Seaboard Air Line Railway.
- Handy**; village in Franklin County.
- Hanford**; post village in Mecklenburg County.
- Hanger**; post village in Buchanan County.
- Hanging Rock**; summit in Potts Mountain. Elevation, 3,000 feet.
- Hangmans**; run, a small right-hand branch of Shenandoah River in Rockingham County.
- Hank**; branch, a small right-hand tributary to New River in Carroll County.
- Hankey**; mountains in Augusta County. Elevation, 3,000 feet.
- Hanna**; post village in Wise County.
- Hanover**; county, situated in the central part of the State lying in part in the Piedmont region and in part on the Atlantic plain. It is traversed by South Anna River, North Anna River forming its northern boundary. The altitude ranges from 100 to 300 feet above sea level. Area, 478 square miles. Population, 17,618—white, 9,696; negro, 7,898; foreign born, 72. County seat, Hanover. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio and the Richmond, Frederick and Potomac railroads.
- Hanover**; county seat of Hanover County on the Chesapeake and Ohio Railway.
- Hansonville**; post village in Russell County. Altitude, 2,175 feet.

- Happy**; creek, a small right-hand branch of Shenandoah River in Warren County.
- Happy Creek**; post village in Warren County on the Southern Railway. Altitude, 790 feet.
- Haran**; post village in Roanoke County.
- Harborton**; post village in Accomac County.
- Hardenburg**; post village in Spottsylvania County.
- Hardesty**; post village in Warren County.
- Hardie**; post village in Henry County.
- Hardware**; post village in Fluvanna County on the Chesapeake and Ohio Railway.
- Hardware**; river, a small left-hand tributary to James River in Albemarle County, formed by North and South forks.
- Hardy**; creek, a small right-hand tributary to New River in Carroll County.
- Hardy**; creek, a small right-hand tributary to Powell River in Lee County.
- Hardy**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Hardys Ford**; post village in Franklin County.
- Hargrove**; creek, a small left-hand tributary to James River in Nelson County.
- Harkening Hill**; summit in the Blue Ridge in Botetourt County. Altitude, 3,878 feet.
- Harless**; post village in Montgomery County.
- Harman**; post village in Tazewell County on the Baltimore and Ohio Railroad.
- Harmon**; branch, a small right-hand tributary to Jackson River in Alleghany County.
- Harmony**; small left-hand branch of New River in Pulaski County.
- Harmony**; post village in Halifax County.
- Harmony Village**; post village in Middlesex County.
- Harpers Home**; post village in Brunswick County.
- Harrell**; post village in Nansemond County.
- Harris**; small left-hand branch of Roanoke River in Bedford County.
- Harris**; creek, a small left-hand tributary to James River in Albemarle County.
- Harris**; post village in Louisa County.
- Harris Creek**; post village in Amherst County.
- Harrison**; creek, a small right-hand tributary to James River in Dinwiddie County.
- Harrisonburg**; county seat of Rockingham County on the Baltimore and Ohio, the Chesapeake Western, and the Southern railroads. Altitude, 1,338 feet. Population, 3,521.
- Harriston**; post village in Augusta County on the Norfolk and Western Railway.
- Harrisville**; post village in Shenandoah County.
- Harry**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Harshberger**; gap in Massanutten Mountain in Rockingham County.
- Hartsock**; post village in Scott County.
- Hartwood**; post village in Stafford County.
- Harvest**; village in Lee County.
- Hervey Mills**; post village in Warren County.
- Haste**; post village in Franklin County.
- Hat**; creek, a small left-hand tributary to James River in Nelson County.
- Hat**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Hat**; post village in Shenandoah County.
- Hatcher**; creek, a small right-hand tributary to James River in Buckingham County.
- Hatcher**; post village in Cumberland County.
- Hatcher**; run, a small branch of Rowanty Creek in Dinwiddie County.
- Hatcher**; run, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Hatcreek**; post village in Campbell County.
- Hatfield**; creek, a small right-hand branch of Roanoke River in Franklin County.
- Hatton**, post village in Albemarle County on the Chesapeake and Ohio Railway.
- Haught**; post village in Franklin County.

- Haw**; branch, small right-hand tributary to Appomattox River in Amelia County.
- Haw**; small right-hand branch of New River in Pulaski County.
- Hawk**; post village in Cumberland County on the Farmville and Powhatan Railroad.
- Hawkins**; creek, a small left-hand tributary to York River in Louisa County.
- Hawkins**; run, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Hawkinstown**; post village in Shenandoah County.
- Hawks Bill**; creek, a small right-hand branch of Shenandoah River in Rockingham County.
- Hawksbill**; creek, a small right-hand tributary to Shenandoah River in Page County.
- Hawks Bill**; summit in the Blue Ridge in Madison County. Elevation, 4,066 feet.
- Hawlin**; post village in Rappahannock County.
- Hay**; run, a small right-hand tributary to Roanoke River in Franklin County.
- Haycock**; post village in Floyd County.
- Hayes Store**; post village in Gloucester County.
- Hayfield**; post village in Frederick County.
- Haymakertown**; post village in Botetourt County.
- Haymarket**; post village in Prince William County on the Southern Railway.
- Haynesville**; post village in Richmond County.
- Hays**; creek, a small right-hand tributary to James River in Alleghany County.
- Hays**; creek, a small right-hand tributary to Jackson River in Alleghany County.
- Hays**; creek, a small left-hand tributary to James River in Rockbridge County.
- Haysi**; post village in Dickinson County.
- Hayter**; gap in Clinch Mountains in Washington County.
- Haywood**; post village in Madison County.
- Hazel**; river, a small right-hand tributary to Rappahannock River in Rappahannock and Culpeper counties.
- Hazel**; run, a small right-hand branch of Rappahannock River in Spotsylvania County.
- Hazelspring**; post village in Washington County.
- Headforemost**; mountain in Bedford County. Elevation, 3,773 feet.
- Headquarters**; post village in Shenandoah County.
- Headwaters**; post village in Highland County.
- Healing Springs**; post village in Bath County.
- Heard**; summit in Albemarle County.
- Hearing**; post village in Norfolk County.
- Heathsville**; county seat of Northumberland County.
- Hebron**; post village in Dinwiddie County.
- Heiskell**; post village in Frederick County.
- Helena**; post village in Bedford County on the Virginia-Carolina Railway.
- Hell**; creek, a bayou tributary to Back Bay in Princess Anne County.
- Helm Mountain**; summit in Nelson County.
- Helms**; post village in Franklin County.
- Helton**; creek, a small left-hand branch of New River, rising in Grayson County.
- Hematite**; post village in Alleghany County on the Chesapeake and Ohio Railway.
- Hemp-patch**; mount in Roanoke County.
- Hendricks Store**; post village in Bedford County.
- Henrico**; county situated in the central part of the State, lying in part in the Piedmont region and in part on the Atlantic plain, its southern boundary being formed by James River. The altitude ranges from 100 to 300 feet above sea level. Area, 273 square miles. Population, 30,062—white, 17,246; negro, 12,816; foreign born, 815. County seat, Richmond. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Atlantic Coast Line, the Chesapeake and Ohio, the Richmond, Frederick and Potomac, the Seaboard Air Line, and the Southern railroads.

- Henry**; cape, point of land in Princess Anne County, the southern point at the entrance to Chesapeake Bay.
- Henry**; county, situated in the southern part of the State in the Piedmont region. It has a rolling, broken surface. Area, 425 square miles. Population, 19,265—white, 10,881; negro, 8,383; foreign born, 16. County seat, Martinsville. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Danville and Western and the Norfolk and Western railways.
- Hepners**; post village in Shenandoah County.
- Hera**; post village in Nottoway County.
- Herald**; post village in Wise County.
- Herbert**; post village in Princess Anne County.
- Hermitage**; post village in Augusta County on the Seaboard Air Line Railway.
- Hernando**; post village in Franklin County.
- Herndon**; town in Fairfax County. Population, 692.
- Herring**; canal in Norfolk County, connecting Dismal Swamp Canal with the Southern Branch of Elizabeth River.
- Hewlett**; post village in Hanover County.
- Hick**; creek, a small left-hand branch of Middle Fork of Holston River in Smyth County.
- Hickman**; village in Franklin County.
- Hickory**; creek, a small left-hand tributary to James River in Nelson County.
- Hickory**; creek, a small left-hand tributary to York River in Louisa County.
- Hickory**; post village in Norfolk County.
- Hickorygrove**; post village in Prince William County.
- Hicks Store**; post village in Spottsylvania County.
- Hicksville**; post village in Bland County.
- Hicks Wharf**; post village in Mathews County.
- Higgins**; post village in Grayson County.
- High**; bridge across Appomattox River between Prince Edward and Cumberland counties.
- High Cock**; summit in Bedford County.
- Highco Mountain**; summit in the Blue Ridge. Elevation, 2,880 feet.
- Highgate**; post village in Surry County.
- Highhill**; post village in Halifax County.
- High Knob**; summit in the Blue Ridge in Rockingham County.
- High Knob**; summit in Wise County. Elevation, 4,188 feet.
- High Knob**; summit in Warren County. Elevation, 2,385 feet.
- Highland**; county, situated in the northwestern part of the State in the Appalachian Valley. The surface consists of an alternation of sandstone ridges and limestone valleys, drained by tributaries to James River. Altitude ranges from 1,800 up to over 4,000 feet. Area, 407 square miles. Population, 5,647—white, 5,269; negro, 378; foreign born, 5. County seat, Monterey. The mean magnetic declination in 1900 was  $2^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $45^{\circ}$  to  $50^{\circ}$ .
- Highland Springs**; post village in Henrico County.
- Highpeak**; post village in Franklin County.
- High Point**; summit in Bath County. Altitude, 3,318 feet.
- High Point**; summit in Sugar Run Mountain. Elevation, 3,910 feet.
- High Rock**; summit in Walker Mountain. Elevation, 3,837 feet.
- High Rocks**; summits in Wythe County. Elevation from 3,000 to 3,660 feet.
- High Top**; summit in Montgomery County. Elevation, 2,690 feet.
- Hightown**; post village in Highland County.
- Hilda**; post village in Sussex County on the Southern Railway.
- Hildebrand**; post village in Augusta County.

- Hillandale**; post village in Charlotte County.
- Hillcroft**; post village in Charlotte County.
- Hillgrove**; post village in Pittsylvania County.
- Hills**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Hillsboro**; town in Loudoun County. Population, 131.
- Hill Station**; post village in Scott County.
- Hillsville**; county seat of Carroll County. Altitude, 2,570 feet.
- Hilo**; post village in Augusta County.
- Hilton**; ford of North Fork of Holston River, near Fido, in Scott County.
- Hiltons**; post village in Scott County on the Virginia and Southwestern Railway.
- Hinckle**; post village in Frederick County.
- Hines**; small left-hand branch of Clinch River in Tazewell County.
- Hinesville**; post village in Pittsylvania County.
- Hinnom**; post village in Westmoreland County.
- Hinton**; post village in Rockingham County.
- Hitch**; post village in Fauquier County.
- Hitchcock**; post village in Greenville County.
- Hitesburg**; post village in Halifax County.
- Hively**; post village in Bath County.
- Hixburg**; post village in Appomattox County.
- Hoadly**; post village in Prince William County.
- Hobson**; post village in Nansemond County.
- Hockman**; post village in Tazewell County on the Norfolk and Western Railway.
- Hodges Draft**; small left-hand tributary to James River in Augusta County.
- Hodges Ferry**; post village in Norfolk County on the Southern Railway.
- Hog**; creek, a small left-hand tributary to James River in Albemarle County.
- Hog Back**; mountains in Loudoun County. Elevation, 500 feet.
- Hog Back**; summit in Little North Mountain. Elevation, 3,000 feet.
- Hoges Store**; post village in Giles County.
- Hog Pen Mountain**; summit in Rockingham County. Elevation, 2,000 feet.
- Hogthief**; creek, a small right-hand branch of Middle Holston River in Washington County.
- Hogtrough**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.
- Hogue**; creek, a small right-hand tributary to Potomac River in Frederick County.
- Holcombs Rock**; post village in Bedford County on the Chesapeake and Ohio Railway. Altitude, 563 feet.
- Holdcroft**; post village in Charles City County.
- Holiday**; creek, a small left-hand branch of Appomattox River in Appomattox County.
- Holladay**; post village in Spottsylvania County.
- Holland**; town in Nansemond County on the Southern Railway. Population, 133.
- Hollins**; post village in Roanoke County on the Norfolk and Western Railway.
- Hollow**; run, a small left-hand tributary to Shenandoah River in Shenandoah County.
- Holly**; creek, a small left-hand tributary to Russell Fork, rising in Dickenson County.
- Holly**; post village in Chesterfield County.
- Hollybrook**; post village in Bland County.
- Hollydale**; post village in Lunenburg County.
- Hollywood**; post village in Appomattox County.
- Holmans**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.
- Holmes**; run, a small right-hand tributary to Potomac River in Fairfax County.
- Holmhead**; post village in Fluvanna County.

**Holstein Mills**; village in Smyth County.

**Holston**; mountains in Washington County. Elevation, 2,000 to 3,000 feet.

**Holston**; post village in Washington County on the Norfolk and Western Railway.

**Holston**; river formed by three forks in Wythe County, and flowing southwest into Tennessee River. Drainage area, 3,790 square miles; discharge, 1,000 cubic feet per second.

**Holston Bridge**; post village in Scott County.

**Holts**; branch, a small right-hand tributary to James River in Appomattox County.

**Homade**; post village in Dickinson County.

**Home**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.

**Homeland**; post village in Culpeper County.

**Homer**; post village in Russell County.

**Homeville**; post village in Sussex County.

**Homewood**; post village in Surry County.

**Honaker**; small left-hand branch of New River in Pulaski County.

**Honaker**; town in Russell County on the Norfolk and Western Railway. Altitude, 1,900 feet. Population, 295.

**Hone Quarry**; mountains in Rockingham County.

**Hone Quarry**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Honeyville**; post village in Page County.

**Hood**; post village in Madison County.

**Hoos**; post village in King George County.

**Hoover**; post village in Rockingham County.

**Hoover Camp**; small right-hand branch of Knox Creek in Buchanan County.

**Hopeful**; post village in Louisa County.

**Hope Mills**; village in Page County.

**Hopeside**; post village in Northumberland County.

**Hopeton**; post village in Accomac County.

**Hopeville**; post village in Greenville County.

**Hopkins**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Hopkins**; post village in Accomac County.

**Hoppen**; run, a small left-hand branch of Rappahannock River in Fauquier County.

**Hopper**; village in Henry County.

**Hopyard**; post village in King George County.

**Horeb**; post village in Bedford County.

**Horn**; ford in Back Creek, a right-hand tributary to Roanoke River in Roanoke County.

**Horners**; post village in Westmoreland County.

**Horns**; small left-hand branch of Cripple Creek in Wythe and Smyth counties.

**Horntown**; post village in Accomac County.

**Horse**; mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.

**Horseleys**; creek, a small left-hand tributary to James River in Amherst County.

**Horse Pasture**; post village in Henry County.

**Horsepen**; cove in Big Stone Ridge in Tazewell County.

**Horsepen**; creek, a small left-hand tributary to Nottoway River in Nottoway County.

**Horsepen**; creek, a small right-hand tributary to Appomattox River in Amelia County.

**Horsepen**; post village in Tazewell County.

**Horsepen**; small right-hand branch of Appomattox River in Amelia County.

**Horse Pen Mountain**; summit in the western part of Bedford County.

**Horseshoe**; mountains in Nelson County. Elevation, 1,500 to 2,000 feet.

**Horse Swamp**; creek, a small right-hand branch of Chickahominy River in Henrico County.

**Horsey**; post village in Accomac County.



**Hortons**; summit in Scott County.

**Hortons Summit**; post village in Scott County on the Virginia and Southwestern Railroad.

**Hot Springs**; post village in Bath County on the Chesapeake and Ohio Railway. Altitude, 2,195 feet.

**Hough**; creek, a small left-hand branch of Rappahannock River in King George County.

**House and Barn**; mountain in Russell County. Altitude, 3,450 feet.

**Houston**; county seat of Halifax County on the Norfolk and Western Railway. Altitude, 1,345 feet. Population, 687.

**Howard**; creek, a small right-hand tributary to York River in Hanover County.

**Howards**; ferry over New River in Pulaski County.

**Howardsville**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Howell**; post village in Patrick County.

**Howells**; gap in Weaver Knob.

**Howertons**; post village in Essex County.

**Howerys**; post village in Floyd County.

**Howlett**; post village in Appomattox County.

**Hubard**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Hubbard**; run, a small right-hand branch of Rappahannock River in Culpeper County.

**Hubbard Springs**; post village in Lee County on the Chesapeake and Ohio Railway.

**Huckleberry Mountain**; summit in Rockingham County.

**Huddle**; creek, a small right-hand branch of Cripple Creek in Wythe County.

**Huddleston**; post village in Alleghany County.

**Hudgins**; post village in Mathews County.

**Hudson**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Hudson**; creek, a small right-hand tributary to York River in Louisa County.

**Hudson Mill**; post village in Culpeper County.

**Huffman**; post village in Craig County.

**Huffman Knob**; summit in Carroll County.

**Huffville**; post village in Floyd County.

**Hugh**; post village in Charlotte County.

**Hughart**; run, a small left-hand tributary to James River in Augusta County.

**Hughes**; creek, a small right-hand branch of Jackson River in Bath County.

**Hughes**; creek, a small right-hand tributary to James River in Bath County.

**Hughes**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Hughes River**; post village in Rappahannock County.

**Hughesville**; post village in Loudoun County.

**Huguenot**; post village in Powhatan County.

**Huguenot**; springs in Powhatan County.

**Hull**; post village in Highland County.

**Hume**; post village in Fauquier County.

**Humpback**; summit in Nelson County. Elevation, 3,645 feet.

**Hundley Springs**; post village in Appomattox County.

**Hungary**; creek, a small right-hand tributary to Chickahominy River in Henrico County.

**Hungary Town**; summit in Lunenburg County. Elevation, 490 feet.

**Hungry**; run, a small right-hand tributary to Potomac River in Loudoun County.

**Hungry Hollow**; creek, a small right-hand tributary to Middle Fork of Holston River.

- Hungry Mother**; creek, a small right-hand branch of Middle Fork of Holston River in Smyth County.
- Hunter**; gap in Powell Mountain in Lee County.
- Hunter**; valley lying between Stone Mountain and Chestnut Ridge in Scott County.
- Hunter Hall**; post village in Franklin County.
- Hunters Lodge**; post village in Fluvanna County.
- Hunters Mills**; post village in Fairfax County.
- Hunting**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Hunting**; creek, a small right-hand branch of James River in Bedford County.
- Hunting**; run, a small right-hand tributary to Rappahannock River in Spottsylvania County.
- Hunting Camp**; creek, a small left-hand tributary to Wolf Creek, rising in Bland County.
- Hunts**; creek, a small right-hand tributary to James River in Buckingham County.
- Huon**; post village in Louisa County.
- Hupp**; village in Rockingham County.
- Hurley**; post village in Buchanan County.
- Hurricane**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Hurricane**; small left-hand branch of Nottoway River in Nottoway County.
- Hurricane**; creek, a small right-hand tributary to Russell Fork, rising in Buchanan County.
- Hurricane**; fork, a small right-hand tributary to Clinch River, rising in Russell County;
- Hurt**; post village in Pittsylvania County on the Southern Railway.
- Hurtsville**; post village in Appomattox County.
- Hutchison Rock**; summit in Clinch Mountain. Altitude, 4,724 feet.
- Hutton**; creek, a small left-hand branch of Middle Fork of Holston River in Smyth County.
- Huttons**; small right-hand branch of Middle Fork of Holston River in Washington County.
- Hyacinth**; post village in Northumberland County.
- Hybla**; post village in King William County.
- Hyco**; post village in Halifax County.
- Hycootee**; small right-hand branch of Dan River in Halifax County.
- Hydraulic**; post village in Albemarle County.
- Hylas**; post village in Hanover County.
- Hyters Gap**; post village in Washington County.
- Iberis**; post village in Lancaster County.
- Ibex**; post village in Dickenson County.
- Ida**; post village in Page County.
- Ideal**; post village in Caroline County.
- Idem**; post village in Amherst County.
- Igo**; post village in King George County.
- Ida**; village in Fairfax County.
- Inca**; post village in Mecklenburg County.
- Inch**; branch, a small right-hand tributary to Shenandoah River in Augusta County.
- Independence**; county seat of Grayson County.
- Independent Hill**; post village in Prince William County.
- Index**; post village in King George County.
- Indian**; creek, a small left-hand branch of Pound River in Wise County.
- Indian**; creek, a small left-hand tributary to James River in Amherst County.
- Indian**; creek, a small right-hand branch of Clinch River, rising in Tazewell County.



- Indian**, creek, a small right-hand branch of Powell River, rising in Lee County and flowing south into Powell River.
- Indian**; creek, a small right-hand branch of Roanoke River in Franklin County.
- Indian**; creek, a small right-hand branch of Russell Fork, rising in Dickenson County.
- Indian**; creek, a small right-hand tributary to New River, rising in Floyd County.
- Indian**; creek, a small right-hand tributary to York River in Louisa County.
- Indiancreek**; post village in Norfolk County.
- Indian Draft**; small left-hand tributary to James River in Bath County.
- Indian Draft**; small right-hand branch of Jackson River in Alleghany County.
- Indianneck**; post village in King and Queen County.
- Indian Ridge**; mountains in Floyd and Carroll counties. Elevation, 3,000 feet.
- Indianrock**; post village in Botetourt County.
- Indiantown**; post village in Orange County.
- Indian Valley**; post village in Floyd County.
- Indika**; post village in Isle of Wight County.
- Inez**; post village in Louisa County.
- Inge**; post village in Lunenburg County.
- Ingle**; post village in Pulaski County.
- Ingles**; ferry over New River in Pulaski County.
- Ingles**; mountains in Pulaski County.
- Ingram**; post village in Halifax County.
- Inlet**; post village in Culpeper County on the Southern Railway.
- Inman**; post village in Wise County on the Virginia and Southwestern Railway.
- Ino**; post village in King and Queen County.
- Interior**; post village in Giles County on the Big Stony Railway.
- Invermay**; post village in Mecklenburg County.
- Ionia**; post village in Dinwiddie County.
- Iraville**; post village in Essex County.
- Irby**; post village in Nottoway County.
- Irene**; post village in Loudoun County.
- Irisburg**; post village in Henry County.
- Irish**; creek, a small left-hand tributary to James River in Rockbridge County.
- Irish**; gap in South Mountains, caused by Irish Creek, in Rockbridge County.
- Irishcreek**; post village in Rockbridge County.
- Iron**; mountain in Alleghany County.
- Iron**; mountains extending from Washington County to Wythe County. Elevation, 3,000 to 4,000 feet.
- Iron Gate**; gap in Patch Mountains, through which flows Jackson River, in Alleghany County.
- Irongate**; town in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,019 feet. Population, 392.
- Iron Hill**; springs in Alleghany County.
- Ironside**; village in Henry County.
- Irvey Notch**; gap in Garden Mountain in Botetourt County.
- Irvington**; post village in Lancaster County.
- Irwin**; post village in Goochland County on the Chesapeake and Ohio Railway.
- Isaac**; creek, a small right-hand tributary to Potomac River in Frederick County.
- Isaac**; post village in Southampton County.
- Isabel**; post village in Culpeper County.
- Isham**; post village in Lunenburg County.
- Isis**; post village in Scott County.
- Island**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Island;** creek, a small right-hand tributary to New River in Carroll County.

**Island;** ford of Jackson River in Alleghany County.

**Island;** post village in Goochland County.

**Islandford;** post village in Rockingham County.

**Isle of Wight;** county, situated in the southeastern part of the State, fronting on the south bank of James River near its mouth. The surface is level and but little elevated above tide. Area, 352 square miles. Population, 13,102—white 6,833; negro, 6,268; foreign born, 35. County seat, Isle of Wight. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Seaboard and Roanoke railways.

**Isle of Wight;** county seat of Isle of Wight County.

**Israel Mountain;** summit in Albemarle County. Elevation, 1,000 feet.

**Issequena;** post village in Goochland County.

**Itata;** post village in Surry County.

**Ivanhoe;** post village in Wythe County on the Norfolk and Western Railway.

**Ivondale;** post village in Richmond County.

**Ivor;** post village in Southampton County on the Norfolk and Western Railway.

**Ivy;** creek, a small left-hand tributary to James River in Nelson County.

**Ivy;** creek, a small right-hand branch of James River in Bedford and Campbell counties.

**Ivy Depot;** post village in Albemarle County on the Chesapeake and Ohio Railway. Altitude 545 feet.

**Ivyview;** post village in Halifax County.

**Jack;** mountains in Highland County, extending into Pendleton County, W. Va. Elevation, 3,500 to 4,000 feet.

**Jacks;** branch, a small left-hand tributary to Nottoway River in Nottoway County.

**Jacks Hill;** summit in Nelson County.

**Jacks Mill;** post village in Floyd County.

**Jackson;** ferry in New River at Jackson in Wythe County.

**Jackson;** post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 845 feet.

**Jackson;** river, a head branch of James River, which has its source in North Mountain and flows in a generally southward course to its junction with the James.

**Jacksondale;** post village in Princess Anne County on the Norfolk and Southern Railroad.

**Jacobsville;** post village in Pittsylvania County.

**Jadwyn;** post village in Shenandoah County.

**Jamaica;** post village in Middlesex County.

**James;** river, formed by two forks, North and South, which head in North Mountain on the west side of the valley of Virginia, and crossing the Valley in a circuitous course passes the Blue Ridge through a gap a few miles above Lynchburg, thence in a generally easterly course it flows into Chesapeake Bay through Hampton Roads; drainage area, 9,684 square miles; mean discharge, 1,854 (Buchanan, Va.); navigable to Richmond.

**James City;** county, situated on the Atlantic plain between York and James rivers, in the eastern part of the State. The surface is low and level, and little elevated. Area, 159 square miles. Population, 3,688—white, 1,346; negro, 2,342; foreign born, 58. County seat, Williamsburg. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**James River;** post village in Amherst County.

**James Store**; post village in Gloucester County.

**Jamestown**; bridge across Appomattox River between Prince Edward and Cumberland counties.

**Jamestown**; post village in James City County.

**Jamesville**; post village in Northampton County.

**Jane**; post village in Dickenson County.

**Jap**; post village in Lee County.

**Jar**; post village in Buckingham County.

**Jarman**; gap in the Blue Ridge in Augusta County.

**Jarratt**; post village in Sussex County.

**Jasper**; post village in Lee County on the Virginia and Southwestern Railway.

**Jasper Mountain**; summit in Pittsylvania County. Elevation, 1,000 feet.

**Jefferson**; post village in Powhatan County.

**Jeffersonton**; post village in Culpeper County.

**Jeffress**; post village in Mecklenburg County on the Southern Railway.

**Jeffries**; branch, a small right-hand tributary to Potomac River in Loudoun County.

**Jeffer**; post village in York County.

**Jelico**; post village in Buchanan County.

**Jenkin**; branch, a small left-hand tributary to Shenandoah River in Augusta County.

**Jenkins**; gap in Crawford Mountain, caused by Jenkins Branch, in Augusta County.

**Jenkins Bridge**; post village in Accomac County.

**Jennings**; creek, a small right-hand tributary to James River in Botetourt County.

**Jennings Gap**; post village in Augusta County.

**Jennings Mountain**; summit in Amherst County.

**Jennings Ordinary**; post village in Nottoway County.

**Jeremiah**; run, a small right-hand tributary to Shenandoah River in Page County.

**Jericho**; canal connecting Drummond Lake with Suffolk in Nansemond and Norfolk counties.

**Jerkentight**; creek, a small left-hand tributary to James River in Bath County.

**Jerome**; post village in Shenandoah County.

**Jerry**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Jesses Mill**; creek, a small left-hand branch of Clinch River, rising in Russell County.

**Jeter**; post village in Bedford County.

**Jetersville**; post village in Amelia County on the Southern Railway.

**Jetts**; creek, a small left-hand branch of King George County.

**Jetts**; post village in Greensville County.

**Jewell Ridge**; mountains in Buchanan County.

**Jimbo**; post village in Bedford County.

**Joe**; creek, a small left-hand tributary to James River in Nelson County.

**Joe**; post village in Buchanan County.

**Joel**; small right-hand branch of Slate Creek in Buchanan County.

**Joel**; village in Franklin County.

**Joes**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.

**John**; creek, a small right-hand tributary to Chickahominy River in Henrico County.

**John**; village in Russell County.

**John**; run, a small right-hand tributary to Shenandoah River in Augusta County.

**Johns**; creek, a right-hand tributary to James River in Craig County.

**Johns**; creek, a small right-hand tributary to Jackson River in Craig County.

**Johns**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Johns Creek**; mountains in Giles and Craig counties. Elevation, 3,000 to 3,500 feet.

**Johnson**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Johnson**; creek, a small left-hand tributary to Roanoke River in Campbell County.

**Johnson**; post village in Scott County.

- Johnson**; run, a small right-hand tributary to Potomac River in Frederick County.
- Johnson Creek**; post village in Patrick County.
- Johnson Mountain**; summit in Bedford County. Altitude, 1,375 feet.
- Johnsons Springs**; post village in Goochland County.
- Jonas**; run, a small right-hand tributary to Rappahannock River in Culpeper County.
- Jones**; small right-hand branch of Opossum Creek in Scott County.
- Jones**; creek, a small right-hand branch of James River in Powhatan County.
- Jones**; creek, a small right-hand branch of North Fork of Powell River in Lee County.
- Jones**; fork, a small right-hand tributary to Levisa Fork in Buchanan County.
- Jones**; neck of land nearly inclosed by a bend in James River in Chesterfield County.
- Jones**; post village in Halifax County.
- Jonesboro**; post village in Brunswick County.
- Jones Hole**; small swamp in Prince George and Sussex counties.
- Jonesville**; county seat of Lee County.
- Jonican**; branch, a small left-hand tributary to James River in Charlotte and Appomattox counties.
- Joplin**; post village in Wise County.
- Jordan**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.
- Jordan Springs**; post village in Frederick County.
- Jordans Store**; post village in Powhatan County.
- Jorgensen**; post village in Lunenburg County.
- Joseph**; post village in Pittsylvania County.
- Joshua**; creek, a small right-hand tributary to James River in Buckingham County.
- Joyceville**; post village in Mecklenburg County.
- Judd**; branch, a small right-hand tributary to Appomattox River in Amelia County.
- Judd**; post village in Brunswick County.
- Judge**; post village in Dickenson County.
- Judith**; creek, a small right-hand branch of James River in Bedford County.
- Jump**; mountains in Rockbridge County. Elevation, 2,500 feet.
- Jump**; post village in Rockbridge County.
- Jumping**; run, a small left-hand branch of Roanoke River in Bedford County.
- Jump Rock**; summit in Rockbridge County. Elevation, 3,190 feet.
- Junta**; village in Franklin County.
- Just**; post village in Lee County.
- Justisville**; post village in Accomac County.
- Ka**; post village in Scott County.
- Kadesh**; village in Pittsylvania County.
- Kara**; post village in Lunenburg County.
- Karl**; post village in Appomattox County.
- Kasey**; post village in Bedford County.
- Kate**; creek, a small left-hand tributary to Roanoke River in Bedford County.
- Katie**; small right-hand branch of Maiden Spring Creek, a tributary to Clinch River, rising in Tazewell County.
- Kays**; run, a small left-hand branch of Rappahannock River in King George County.
- Keats**; post village in Mecklenburg County.
- Keeling**; post village in Pittsylvania County.
- Keen**; mountains in Buchanan County. Elevation, 2,500 feet.
- Keene**; post village in Albemarle County.
- Keezletown**; post village in Rockingham County on the Chesapeake Western Railway.

**Keller**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Kelley**; mountains in Augusta County. Elevation, 2,000 to 3,000 feet.

**Kellys Ford**; post village in Culpeper County.

**Kelso**; village in Bedford County.

**Kempis**; post village in Amelia County.

**Kempsville**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Kendallgrove**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.

**Kenmore**; post village in Fairfax County.

**Kennedy**; creek, a small right-hand tributary to Shenandoah River in Augusta County.

**Kennett**; post village in Franklin County.

**Kent**; branch, a small left-hand tributary to James River in Fluvanna County.

**Kent Ridge**; mountains in Russell and Tazewell counties. Elevation, 2,500 feet.

**Kents Store**; post village in Fluvanna County.

**Kentuck**; post village in Pittsylvania County.

**Kenwood**; station in Hanover County on the Richmond, Fredericksburg, and Potomac Railroad.

**Kepheart**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Kerfoot**; post village in Fauquier County.

**Kerns**; mountains in Shenandoah County. Elevation, 1,500 to 3,000 feet.

**Kernstown**; post village in Frederick County on the Baltimore and Ohio Railroad. Altitude, 744 feet.

**Kerrs**; creek, a small left-hand tributary to James River in Rockbridge County.

**Kerrs Creek**; post village in Rockbridge County.

**Keswick**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Ketron**; post village in Washington County.

**Kettle**; run, a small right-hand tributary to Potomac River in Prince William County.

**Kew**; post village in Campbell County.

**Keysville**; town in Charlotte County on the Southern Railway. Altitude, 628 feet. Population, 82.

**Kibler**; post village in Patrick County.

**Kidd**; post village in Albemarle County.

**Kilmarnock**; post village in Lancaster County.

**Kimball**; post village in Page County on the Norfolk and Western Railway. Altitude, 892 feet.

**Kimballton**; post village in Giles County on the Big Stony Railway.

**Kimberling**; creek, a small left-hand branch of Walker Creek in Bland County.

**Kimberling**; creek, a small right-hand tributary to Walker Creek, rising in Bland County.

**Kimberling**; post village in Bland County.

**Kimberling**; springs in Bland County.

**Kinderwood**; post village in Lunenburg County.

**Kindrick**; post village in Grayson County.

**King and Queen**; county, situated in the central part of the State on the Atlantic plain. The surface is level and but little elevated above tide. Area, 336 square miles. Population, 9,265—white, 4,006; negro, 5,259; foreign born, 2. County seat, King and Queen. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 45 to 50 inches, and the temperature 55° to 60°.

**King and Queen**; county seat of King and Queen County.

**King George;** county, situated in the eastern part of the State, lying on the south side of Potomac River on the Atlantic plain. The surface is rolling and but little elevated above tide. Area, 183 square miles. Population, 6,918—white, 3,596; negro, 3,322; foreign born, 22. County seat, King George. The mean magnetic declination in 1900 was  $4^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ .

**King George;** county seat of King George County.

**Kings Hill;** summit in Augusta County.

**Kingsland;** creek, a small right-hand branch of James River in Chesterfield County.

**Kings Mill;** post village in Washington County.

**King William;** county, situated in the central part of the State on the Atlantic plain. It has a level surface, but little elevated. Area, 246 square miles. Population, 8,380—white, 3,266; negro, 4,962; foreign born, 35. County seat, King William. The mean magnetic declination in 1900 was  $3^{\circ} 36'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern Railway.

**King William;** county seat of King William County.

**Kinsale;** post village in Westmoreland County.

**Kinser;** creek, a small left-hand branch of Cripple Creek in Wythe County.

**Kioak;** post village in Lee County.

**Kipling;** post village in Grayson County.

**Kiracofe;** post village in Augusta County.

**Kirk;** post village in Lee County.

**Knightly;** post village in Augusta County.

**Knob;** fork, a small right-hand branch of New River in Grayson County.

**Knob;** post village in Tazewell County.

**Knob;** summit in Botetourt County.

**Knob;** summit in Rockbridge County. Elevation, 2,000 feet.

**Knolls;** post village in Campbell County.

**Knopf;** post village in Caroline County.

**Koiners Store;** post village in Augusta County.

**Kola;** post village in Patrick County.

**Kopp;** post village in Prince William County.

**Korea;** post village in Culpeper County.

**Koakoo;** post village in Southampton County.

**Kountz;** post village in Page County.

**Kruger;** post village in Prince George County.

**Kunath;** post village in Lunenburg County.

**Kyle;** village in Botetourt County.

**Laban;** post village in Mathews County.

**Lacey Spring;** post village in Rockingham County.

**Lackey;** post village in York County.

**Laconia;** post village in Charlotte County.

**Lacrosse;** post village in Mecklenburg County on the Seaboard Air Line and the Southern railways.

**Lacy;** post village in Pittsylvania County.

**Ladd;** village in Augusta County.

**Lafayette;** post village in Montgomery County on the Potomac, Fredericksburg and Piedmont Railroad.

**Lagrange;** post village in Culpeper County on the Chesapeake and Ohio Railway. Altitude, 1,618 feet.

**Lahore;** post village in Orange County.

**Laird;** post village in Dinwiddie County.

**Laird Knob;** summit in Massanutten Mountain.

**Lakeview**; post village in Clarke County.

**Lakota**; post village in Culpeper County.

**Lamb**; creek, a small left-hand branch of Rappahannock River in King George County.

**Lamb**; post village in Greene County.

**Lambert**; post village in Mecklenburg County.

**Lambsburg**; post village in Carroll County.

**Lamont**; post village in Smyth County.

**Lancaster**; county, situated in the eastern part of the State on the north side of Rappahannock River and on the north and west shores of Chesapeake Bay. Its surface is level, and but little elevated above tide. Area, 137 square miles. Population, 8,949—white, 4,058; negro, 4,891; foreign born, 25. County seat, Lancaster. The mean magnetic declination in 1900 was  $4^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ .

**Lancaster**; county seat of Lancaster County.

**Lance**; post village in Stafford County.

**Land**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Landis**; post village in Augusta County.

**Landmark**; post village in Fauquier County.

**Land of Promise**; post village in Princess Anne County.

**Landsdown**; post village in Prince William County.

**Lanesville**; post village in King William County.

**Laneview**; post village in Essex County.

**Lanexa**; post village in New Kent County on the Chesapeake and Ohio Railway.

**Langley**; post village in Fairfax County.

**Lantana**; post village in Goochland County.

**Lantz Mills**; post village in Shenandoah County.

**Lapsley**; run, a small right-hand tributary to James River in Botetourt County.

**Lara**; post village in Northumberland County.

**Lasley**; post village in Louisa County.

**Lassiter**; post village in Goochland County.

**Latona**; village in Rockingham County.

**Laughon**; village in Bedford County.

**Laurel**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Laurel**; small right-hand branch of Knox Creek in Buchanan County.

**Laurel**; creek, a small left-hand tributary to South Fork of Holston River in Washington County.

**Laurel**; creek, a small left-hand tributary to Wolf Creek, rising in Bland County.

**Laurel**; creek, a small right-hand tributary to Roanoke River in Roanoke County.

**Laurel**; creek, a small right-hand tributary to New River, rising in Floyd County and flowing into Pulaski County.

**Laurel**; creek, a small right-hand tributary to James River in Alleghany County.

**Laurel**; creek, a small right-hand branch of Wolf Creek in Bland County.

**Laurel**; small creek tributary to North Fork of Holston River, rising in Tazewell County.

**Laurel**; creek, a small tributary to Bluestone River in Tazewell County.

**Laurel**; creek, a small right-hand branch of North Fork of Holston River, rising in Tazewell County.

**Laurel**; fork, a small left-hand branch of North Fork of Potomac River in Highland County.

**Laurel**; fork, a small right-hand tributary to Clinch River in Scott County.

**Laurel**; fork, a small right-hand tributary to Dry Fork, rising in Tazewell County.

**Laurel**; fork, a small right-hand tributary to New River in Carroll County.

**Laurel**; fork, a small right-hand branch of Pigeon Creek in Wise County.



**Laurel**; run, a small left-hand tributary to James River in Rockbridge County.

**Laurelfork**; post village in Carroll County.

**Laurelgrove**; post village in Pittsylvania County.

**Laurelhill**; post village in Augusta County.

**Laurel Hollow**; branch, a small right-hand branch of Little Walker Creek in Pulaski County.

**Laurel Mills**; post village in Rappahannock County.

**Laurel Ridge**; mountains in Montgomery County.

**Laurel Shorts**; creek, a small right-hand tributary to New River in Carroll County.

**Lawford**; post village in Buckingham County.

**Lawrenceville**; county seat of Brunswick County on the Southern Railway. Population, 760.

**Lawton**; post village in Giles County.

**Lawyers**; post village in Campbell County.

**Layman**; post village in Craig County.

**Layton**; post village in Essex County.

**Leader**; post village in Chesterfield County.

**Leaf**; post village in Scott County.

**Leah**; post village in Floyd County.

**Leaksville**; post village in Page County on the Danville and Western Railway.

**Leatherwood**; post village in Henry County.

**Leavells**; post village in Spottsylvania County on the Atlantic and Danville Railroad.

**Lebanon**; county seat of Russell County. Population, 325. Altitude, 2,131 feet.

**Lebanon Church**; post village in Shenandoah County.

**Leck**; post village in Dickenson County.

**Leda**; post village in Halifax County.

**Ledbetter**; creek, a small left-hand branch of Meherrin River in Lunenburg County.

**Lee**; county, situated in the southwestern part of the State, having for its northern boundary the escarpment of the Cumberland Plateau, which here forms the State line with Kentucky. Its southern line is the boundary of Tennessee. Its surface consists mainly in an alternation of short parallel ridges of sandstone and narrow valleys filled with limestone. It is drained by Powell River. Area, 433 square miles. Population, 19,856—white, 19,116; negro, 740; foreign born, 17. County seat, Jonesville. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Louisville and Nashville Railroad.

**Lee**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Lee**; creek, a small right-hand tributary to James River in Botetourt County.

**Lee**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Leeds**; post village in Amherst County.

**Leedstown**; post village in Westmoreland County.

**Leehall**; post village in Warwick County on the Chesapeake and Ohio Railway.

**Lee Mill**; pond in Prince George County at the mouth of Warwick Swamp.

**Leeland**; post village in Stafford County.

**Leemont**; post village in Accomac County.

**Lee Mountain**; summit in Botetourt County.

**Leesburg**; county seat of Loudoun County on the Southern Railway. Population, 1,513.

**Lees Mills**; post village in Washington County.

**Leesville**; post village in Campbell County.

**Left Crab Orchard**; creek, a small right-hand tributary to North Fork of Powell River.

**Legato**; post village in Fairfax County.

**Legg**; post village in Wise County on the Interstate Railroad.



- Leigh**; mountain in Prince Edward County. Elevation, 715 feet.
- Leighs**; post village in Fairfax County.
- Leithton**; post village in Loudoun County.
- Lelia**; post village in Floyd County.
- Lemar**; post village in Franklin County.
- Lemons**; run, a small left-hand tributary to Roanoke River in Botetourt County.
- Lenah**; post village in Loudoun County.
- Lennie**; village in Lee County.
- Lennig**; post village in Halifax County.
- Lenore**; post village in Frederick County.
- Lent**; post village in Caroline County.
- Leon**; post village in Madison County.
- Leonis**; village in Fluvanna County.
- Leplo**; village in Washington County.
- Leslie**; post village in Roanoke County.
- Lester Manor**; post village in King William County on the Southern Railway.
- Lesters**; post village in Montgomery County.
- Letcher**; post village in Bath County.
- Levelrun**; post village in Pittsylvania County.
- Levisa Fork**; river, tributary to Ohio River, formed by two forks, North and South, in Buchanan County, and flowing northwest into the Big Sandy.
- Levy**; post village in Loudoun County.
- Lew**; post village in Frederick County.
- Lewinsville**; post village in Fairfax County.
- Lewis**; creek, a small left-hand tributary to Shenandoah River in Augusta County.
- Lewis**; creek, a small right hand tributary to Clinch River in Russell County.
- Lewis**; run, a small left-hand branch of Shenandoah River in Clarke County.
- Lewisetta**; post village in Northumberland County.
- Lewiston**; post village in Spottsylvania County.
- Lexington**; county seat of Rockbridge County on the Chesapeake and Ohio and the Baltimore and Ohio railroads. Altitude, 946 feet. Population, 3,203.
- Libbie**; post village in Lee County.
- Liberty Furnace**; post village in Shenandoah County.
- Liberty Hill**; small branch of Maiden Spring Creek tributary to Clinch River in Tazewell County.
- Liberty Hill**; summit in Tazewell County.
- Liberty Mills**; post village in Orange County.
- Lick**; branch, a small right-hand tributary to James River in Craig County.
- Lick**; branch, a small left-hand tributary to Roanoke River in Bedford County.
- Lick**; small right-hand branch of Knox Creek in Buchanan County.
- Lick**; creek, a small right-hand branch of Clinch River, rising in Russell Fork.
- Lick**; creek, a small right-hand tributary to Roanoke River in Floyd County.
- Lick**; creek, a small right-hand tributary to New River in Montgomery County.
- Lick**; creek, a small left-hand branch of Russell Fork, rising in Dickenson County.
- Lick**; creek, a small right-hand branch of Russell Fork, rising in Buchanan County.
- Lick**; creek, a small right-hand tributary to North Fork of Holston River, rising in Bland County.
- Lick**; mountain in Bedford County. Elevation, 1,839 feet.
- Lick**; mountain in Craig County.
- Lick**; mountains in Alleghany County. Elevation, 2,000 to 2,990 feet.
- Lick**; mountains in Wythe County. Elevation, 2,500 to 3,000 feet.
- Lick**; run, a small left-hand tributary to Roanoke River in Bedford County.
- Lick**; run, a small left-hand tributary to Shenandoah River in Frederick County.
- Licking**; post village in Goochland County.

**Licking**; creek, a small right-hand tributary to James River in Chesterfield County.

**Licking**; run, a small right-hand tributary to Potomac River in Fauquier County.

**Lickinghole**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Lickinghole**; creek, a small left-hand tributary to James River in Albemarle County.

**Lick Log**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Lick Run**; ferry across Jackson River at Lick Run in Botetourt County.

**Lickrun**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 1,019 feet.

**Lieutenant**; creek, a small right-hand tributary to James River in Dinwiddie County.

**Lightfoot**; post village in York County.

**Lignite**; post village in Botetourt County.

**Lignum**; post village in Culpeper County.

**Lilburn**; post village in Powhatan County.

**Lilian**; post village in Northumberland County.

**Lilly**; village in Rockingham County.

**Limeton**; post village in Warren County.

**Limstrong**; post village in Prince William County.

**Lina**; post village in Dinwiddie County.

**Lincoln**; post village in Loudoun County.

**Lincolnia**; post village in Fairfax County.

**Lindell**; post village in Washington County.

**Linden**; post village in Warren County on the Southern Railway. Altitude, 916 feet.

**Lindsay**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Lindward**; post village in Charlotte County.

**Link**; post village in Norfolk County.

**Linkhorn**; bay, a lagoon in Princess Anne County, separated from the Atlantic Ocean by a sand bar.

**Linkous**; ferry over New River in Pulaski County.

**Linn Camp**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.

**Linnville**; creek, a small left-hand tributary to Shenandoah River in Rockingham County.

**Linnville**; post village in Rockingham County on the Southern Railway. Altitude, 1,242 feet.

**Lipps**; post village in Wise County.

**Lipscomb**; post village in Augusta County on the Norfolk and Western Railway.

**Lipses**; run, a small right-hand tributary to James River in Botetourt County.

**Lisbon**; post village in Bedford County.

**Lithia**; post village in Botetourt County on the Norfolk and Western Railway. Altitude, 965 feet.

**Little**; creek, a small right-hand tributary to Appomattox River in Amelia and Nottoway counties.

**Little**; small creek in Princess Anne County.

**Little**; creek, a small branch of Wolf Creek in Tazewell County.

**Little**; creek, a small right-hand tributary to Roanoke River in Franklin County.

**Little**; mountain in Craig County. Elevation, 2,000 feet.

**Little**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.

**Little**; mountains in Franklin County.

**Little**; mountains in Highland County. Elevation, 3,000 to 4,000 feet.

- Little**; river, a small left-hand tributary to Shenandoah River in Augusta County.
- Little**; river, a left-hand tributary to York River in Hanover County.
- Little**; river, a right-hand tributary to New River rising in Floyd County.
- Little**; river, a right-hand branch of New River in Montgomery County.
- Little**; river, a small right-hand tributary to Potomac River in Fauquier County.
- Little**; summit in Back Creek Mountain in Bath County.
- Little Back**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Little Back**; creek, a small left-hand tributary to James River in Bath County.
- Little Bear**; creek, a small right-hand tributary to Shenandoah River in Rockingham County.
- Little Beaver**; creek, a small right-hand branch of James River in Campbell County.
- Little Bottom**; creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Little Briery**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.
- Little Brush**; creek, a small left-hand tributary to New River in Carroll County.
- Little Brushy**; mountains in Smyth County. Elevation, 2,500 feet.
- Little Buffalo**; creek, a small right-hand branch of Appomattox River in Prince Edward County.
- Little Bull**; run, a small right-hand tributary to Roanoke River in Franklin County.
- Little Byrd**; creek, a small left-hand tributary to James River in Goochland County.
- Little Calf Pasture**; river, a small left-hand tributary to James River in Rockbridge and Augusta counties.
- Little Camp**; mountain in Rockbridge County. Elevation, 2,000 to 3,000 feet.
- Little Cast Steel**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Little Catawba**; creek, a small right-hand tributary to James River in Botetourt County.
- Little Cattail**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Little Cattail**; creek, a small right-hand branch of Rowanty Creek.
- Little Cedar**; creek, a small left-hand tributary to Clinch River, rising in Russell County.
- Little Cobbler**; mountains in Fauquier County. Elevation, 750 to 1,000 feet.
- Little Cranberry**; creek, a small right-hand tributary to New River in Carroll County.
- Little Falling**; river, a small left-hand tributary to Roanoke River in Campbell County.
- Little Fox**; creek, a small right-hand tributary to New River in Grayson County.
- Little Fox**; creek, a small right-hand tributary to Russell Fork, rising in Buchanan County.
- Little George**; creek, a small right-hand branch of James River in Buckingham County.
- Little Guinea**; creek, a small left-hand branch of Appomattox River in Cumberland County.
- Little Hound**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.
- Little House Mountain**; summit in Rockbridge County. Elevation, 3,410 feet.
- Little Hunting**; creek, a small right-hand branch of Potomac River in Fairfax County.

**Little Indian;** creek, a small left-hand tributary to Clinch River, rising in Russell County.

**Little Indian;** creek, a small right-hand tributary to New River in Floyd County.

**Little Indian;** run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Little Isaac;** creek, a small right-hand tributary to Potomac River in Frederick County.

**Little Laurel;** creek, a small right-hand tributary to New River in Pulaski County.

**Little Lickinghole;** creek, a small left-hand tributary to James River in Goochland County.

**Little Lynville;** creek, a small right-hand tributary to Roanoke River in Franklin County.

**Little Mack;** creek, a small right-hand tributary to New River in Pulaski County.

**Little Mare;** mountains in Bath County.

**Little Mary;** creek, a small left-hand tributary to James River in Rockbridge County.

**Little Middle;** mountains in Bath and Alleghany counties.

**Little Mill;** creek, a small right-hand branch of Clinch River in Russell County.

**Little Mountain;** summit in Franklin County.

**Little Narrows;** passage between islands in Back Bay, Princess Anne County.

**Little North;** mountains in Augusta, Rockbridge, Shenandoah, and Frederick counties. Elevation, 2,000 to 3,000 feet.

**Little Nottoway;** river, a small left-hand branch of Nottoway River in Nottoway County.

**Little Ogle;** creek, a small right-hand tributary to Jackson River in Alleghany County.

**Little Opossum;** creek, a small right-hand branch of James River in Campbell County.

**Little Oregon;** creek, a small right-hand tributary to James River in Craig County.

**Little Otter;** river, a small left-hand tributary to Roanoke River, formed by two forks, North and South, in Bedford County.

**Little Passage;** creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Little Patterson;** creek, a small right-hand tributary to James River in Botetourt County.

**Little Piney;** small left-hand tributary to James River in Amherst County.

**Little Piney;** mountains in Bath County.

**Little Plymouth;** post village in King and Queen County.

**Little Prator;** creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.

**Little Priest;** summit in Nelson County.

**Little Reed Island;** creek, a right-hand tributary to New River in Carroll County.

**Little Ridge;** mountains in Botetourt County.

**Little River;** post village in Floyd County on the Chesapeake and Ohio Railway.

**Little Roanoke;** creek, a small left-hand branch of Roanoke River in Charlotte County.

**Little Sandy;** creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Little Seneca;** river, a small left-hand tributary to Roanoke River in Campbell County.

**Little Sluice;** mountains in Shenandoah County. Elevation, 2,000 feet.

**Little Snake;** creek, a small right-hand tributary to New River in Carroll County.

**Little Spy;** summit in the Blue Ridge in Augusta County.

**Little Stone;** gap in Little Stone Mountain in Wise County.

**Little Stone**; mountains in Wise County.

**Little Stone Ridge**; mountains in Tazewell County. Elevation, 3,000 feet. .

**Little Stony**; creek, a small left-hand tributary to Roanoke River in Bedford County. .

**Little Stony**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Little Stony**; creek, a small right-hand branch of New River in Giles County.

**Little Straightstone**; creek, a small right-hand tributary to Roanoke River in Pittsylvania County.

**Little Tom**; creek, a small right-hand tributary to Clinch River, rising in Wise County.

**Littleton**; post village in Sussex County.

**Little Town Hill**; creek, a small right-hand tributary to Clinch River in Tazewell County.

**Little Tumbling**; creek, a small right-hand branch of North Fork of Holston River in Smyth County.

**Little Walker**; creek, a small right-hand branch of Walker Creek in Pulaski County.

**Little Walker**; creek, a small left-hand branch of Walker Creek, rising in Bland County.

**Little Walker**; mountains in Pulaski, Wythe, and Bland counties. Elevation, 2,000 to 3,000 feet.

**Little Willis**; river, a small right-hand tributary to James River in Buckingham and Cumberland counties.

**Litwalton**; post village in Lancaster County.

**Lively**; post village in Lancaster County.

**Livingston**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Lloyds**; post village in Essex County.

**Lobelia**; post village in Franklin County.

**Lochleven**; post village in Lunenburg County.

**Locker**; post village in Rockbridge County.

**Locket**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Lockhart**; post village in Albemarle County.

**Locklies**; post village in Middlesex County.

**Loco**; post village in Sussex County.

**Locust**; creek, a small left-hand tributary to York River in Louisa County.

**Locust**; creek, a small right-hand tributary to Roanoke River in Botetourt County.

**Locustcreek**; post village in Louisa County.

**Locustdale**; post village in Madison County.

**Locustgrove**; post village in Orange County.

**Locusthill**; post village in Middlesex County.

**Locustlane**; post village in Scott County.

**Locustmount**; post village in Accomac County.

**Locustville**; post village in Accomac County.

**Lodge**; post village in Northumberland County.

**Lodi**; post village in Washington County.

**Lodore**; post village in Amelia County.

**Loftis**; post village in Halifax County.

**Lofton**; post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,782 feet.

**Logan**; creek, a small left-hand branch of North Fork of Holston River in Washington County.

**Logan**; post village in Spottsylvania County.

**Lois**; post village in Fauquier County.

**Lola**; post village in Pittsylvania County.

**Londonbridge**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Lone Buck**; small left-hand branch of James River in Amherst County.

**Lonecedar**; post village in Patrick County.

**Lone Fountain**; post village in Augusta County.

**Lonegum**; village in Bedford County.

**Loneoak**; post village in Henry County.

**Lonepine**; post village in Bedford County.

**Lone Tree**; summit in Blue Ridge in Augusta County. Elevation, 3,180 feet.

**Long**; branch, a small left-hand tributary to Nottoway River in Nottoway County.

**Long**; small left-hand branch of Nottoway River in Nottoway County.

**Long**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Long**; branch, a small right-hand tributary to Potomac River in Fairfax County.

**Long**; island in Roanoke River in Pittsylvania County.

**Long**; marshy island in Back Bay in Princess Anne County.

**Long**; mountains in Campbell County. Elevation, 1,000 feet.

**Long**; post village in Page County.

**Long**; run, a small right-hand tributary to James River in Botetourt County.

**Longcreek**; post village in Louisa County.

**Long Dale**; mines in North Mountains in Alleghany County.

**Longdale**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,166 feet.

**Long Drive**; mountains in Augusta County. Elevation, 2,500 feet.

**Longfield**; post village in Lee County.

**Longglade**; post village in Augusta County.

**Long Glade**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Longhollow**; post village in Smyth County.

**Long Meadow**; creek, a small tributary to Shenandoah River in Augusta County.

**Long Mountain**; post village in Amherst County.

**Long Mountain**; summit in Amherst County.

**Long Ridge**; summit in Page County.

**Longs Gap**; post village in Grayson County.

**Longs Shop**; post village in Montgomery County.

**Longspur**; post village in Bland County.

**Longview**; post village in Isle of Wight County.

**Longwood**; post village in Rockbridge County.

**Lookout**; mountains in Augusta County. Elevation, 2,000 to 2,500 feet.

**Looney**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.

**Looney**; creek, a small right-hand tributary to Powell River in Wise County.

**Looney**; post village in Craig County.

**Looneys Mill**; creek, a small right-hand tributary to James River in Botetourt County.

**Loop**; summit in Rockbridge County. Elevation, 2,500 feet.

**Loretto**; post village in Essex County.

**Lorne**; post village in Caroline County.

**Lorraine**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Lorton Valley**; post village in Fairfax County.

**Lost**; creek, a small right-hand branch of Guest River in Wise County.

**Lost**; mountains in Roanoke County. Elevation, 2,000 feet.

**Lost**; mountains in Fauquier County. Elevation, 750 feet.

**Lost Mountain**; summit in Madison County.

**Lot**; post village in Middlesex County.

**Lots**; gap in Mays Mountain.

**Lottie**; post village in Rappahannock County.

**Lottsburg**; post village in Northumberland County.

**Lotus**; post village in Wise County.

**Loudoun**; county, situated in the northern part of the State in the Piedmont region, the western boundary being the summit of the Blue Ridge and northern and eastern boundaries being Potomac River. The surface is mainly rolling, and it is traversed by the Catoctin Mountain, Short Hill, and the eastern slopes of the Blue Ridge. Most of its area lies below the 500-foot level. Area, 519 square miles. Population, 21,948—white, 16,079; negro, 5,868; foreign born, 101. County seat, Leesburg. The mean magnetic declination in 1900 was  $3^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Southern Railway.

**Loudoun Heights**; summit in the Blue Ridge on the south side of Harpers Ferry Gap.

**Louisa**; county, situated in the central part of the State in the Piedmont region. It has an undulating surface, and lies but a few hundred feet above sea level. Area, 529 square miles. Population, 16,517—white, 7,896; negro, 8,621; foreign born, 49. County seat, Louisa. The mean magnetic declination in 1900 was  $3^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.

**Louisa**; county seat of Louisa County on the Chesapeake and Ohio Railway. Population, 261.

**Loup**; creek, a small left-hand tributary to Clinch River in Russell County.

**Louse**; creek, a small left-hand tributary to Roanoke River in Charlotte County.

**Love**; post village in Nelson County.

**Love**; run, a small right-hand tributary to Shenandoah River in Augusta County.

**Lovelady**; creek, a small right-hand branch of North Fork of Clinch River in Lee County.

**Lovelady**; creek, a small left-hand tributary to James River in Amherst County.

**Lovelady**; gap in Powell Mountain, made by Lovelady Creek, in Lee County.

**Lovelady Mountain**; summit in Amherst County.

**Lovels**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Love Mills**; village in Washington County.

**Lovett**; point on Elizabeth River in Norfolk County.

**Lovettsville**; town in Loudoun County. Population, 97.

**Lovingston**; county seat of Nelson County.

**Low**; gap in Grayson County.

**Low**; gap in Sandy Ridge Mountains in Russell County.

**Lower**; gap in Back Creek Mountains, made by Back Creek, a left-hand tributary to James River in Highland County.

**Lower Field**; small right-hand branch of Slate Creek in Buchanan County.

**Lowesville**; post village in Amherst County.

**Lowland**, post village in Washington County.

**Lowmoor**; post village in Alleghany County on the Chesapeake and Ohio Railway. Altitude, 1,156 feet.

**Lowry**; post village in Bedford County on the Norfolk and Western Railway. Altitude, 779 feet.

**Loyalty**; post village in Loudoun County.

**Lucia**; post village in Henry County.

**Luckets**; post village in Loudoun County.

**Lula**; post village in Charlotte County.



**Luma**; village in Washington County.

**Lumberton**; post village in Sussex County.

**Lundy**; post village in Grayson County.

**Lunenburg**; county, situated in the southern part of the State in the Piedmont region. It has an undulating surface with an altitude of from 300 to 500 feet above sea level. Area, 471 square miles. Population, 11,705—white, 5,133; negro, 6,572; foreign born, 122; county seat Lunenburg. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the temperature 55° to 60°. The county is traversed by the Seaboard Air Line and the Southern railways.

**Lunenberg**; county seat of Lunenburg County.

**Lunette**; post village in Loudoun County.

**Lunsford**; post village in Cumberland County.

**Luray**; county seat of Page County on the Norfolk and Western Railway. Altitude, 819 feet. Population, 1,147.

**Lurich**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,526 feet.

**Luster**; fork, a small left-hand branch of Knox Creek, rising in Buchanan County.

**Lux**; post village in Dinwiddie County.

**Lydia**; post village in Greene County.

**Lyells**; post village in Richmond County.

**Lylevue**; post village in Botetourt County.

**Lynch**; creek, a small left-hand tributary to James River in Nelson County.

**Lynch**; river, a small left-hand tributary to James River in Greene and Albemarle counties.

**Lynchburg**; city, independent in government, situated in Campbell County, on the Chesapeake and Ohio, the Norfolk and Western, and the Southern railways. Altitude, 524 feet. Population, 18,891.

**Lynchburg**; mines in the western part of the Blue Ridge in Botetourt County.

**Lynch Station**; post village in Campbell County on the Seaboard Air Line Railway.

**Lyndhurst**; post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,337 feet.

**Lynhams**; post village in Northumberland County.

**Lynne Camp**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.

**Lynn Haven**; inlet, a passage through the bordering sand bar on the southeast coast.

**Lynnhaven**; post village in Princess Anne County on the Norfolk and Western Railway.

**Lynn Haven**; river, rising in Princess Anne County and flowing north through Lynn Haven Inlet into Chesapeake Bay.

**Lynn Haven**; roads, a harbor at the mouth of Lynn Haven River, by which it is connected with Chesapeake Bay, in Princess Anne County.

**Lynnville**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Lynnville**; ford in Roanoke River in Franklin County.

**Lynville**; mountains in Bedford County. Elevation, 1,500 to 2,000 feet.

**Lynnwood**; post village in Rockingham County.

**Lyon**; gap in Walker Mountains in Smyth County.

**Lytton**; ford in Powell River in Lee County.

**Mableton**; post village in Hanover County.

**MacAfee Knob**; summit in Catawba Mountains in Roanoke County. Elevation, 3,201 feet.

**Macanie**; post village in Shenandoah County.

**McClelland**; post village in Isle of Wight County.

**McClung**; post village in Bath County.



**McClung Ridge**; mountains in Bath County.

**McClure**; fork, a small left-hand branch of Russell Fork, rising in Dickenson County.

**McConnell**; post village in Scott County on the Norfolk and Western Railway.

**Maccrady**; post village in Smyth County.

**McDaniel**; small left-hand branch of North Fork of Holston River in Smyth County.

**McDonalds Mill**; post village in Montgomery County.

**McDowell**; town in Highland County. Population, 136.

**McDuff**; post village in Caroline County.

**Maceo**; post village in Dinwiddie County.

**Maces Spring**; post village in Scott County.

**McFalls**; branch, a small right-hand tributary to James River in Botetourt County.

**McFalls**; mountain in Bedford County. Elevation, 2,426 feet.

**McFarlands**; post village in Lunenburg County.

**McGaheysville**; post village in Rockingham County on the Chesapeake Western Railway.

**McGavock**; river, a small left-hand tributary to New River in Wythe County.

**McGehees**; post village in Fluvanna County.

**McGrady**; creek, a small right-hand branch of North Fork of Holston River in Smyth County.

**McGraw**; gap in Alleghany County caused by Smyth Creek.

**McHenry**; creek, a small left-hand tributary to North Fork of Holston River in Washington County.

**McHenry**; post village in Spottsylvania County.

**Machipongo**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.

**Machodoc**; creek, a small right-hand branch of Potomac River in King George County.

**Machodoc**; post village in Westmoreland County.

**McHolt**; post village in Halifax County.

**McInturf**; gap in Short Mountain in Shenandoah County.

**McIvors**; station in Amherst County on the Richmond and Danville Railway. Altitude, 704 feet.

**Mack**; creek, a small right-hand branch of New River in Pulaski County.

**Mack**; mountains in Pulaski and Floyd counties. Elevation, 2,000 to 3,404 feet.

**Mackalls Hill**; summit in Fairfax County.

**MacKeever**; ferry over Roanoke River in Fairfax County.

**McKenney**; post village in Dinwiddie County on the Seaboard Air Line Railroad.

**Mackie**; post village in Norfolk County.

**McKinley**; post village in Augusta County.

**MacMullen**; post village in Green County on the Norfolk and Western Railway.

**Macon**; post village in Powhatan County on the Farmville and Powhatan Railroad.

**MacRaes**; post village in Cumberland County on the Farmville and Powhatan Railroad.

**McVeigh**; ford of Roanoke River in Bedford County.

**Madcap**; creek, a small right-hand tributary to Roanoke River in Franklin County.

**Maddux**; post village in Nottoway County.

**Madison**; county, situated in the northern part of the State in the Piedmont region. Its southeastern part is rolling with a few isolated summits, while the western part is made up of heavy spurs of the Blue Ridge. The elevation ranges from 300 to 4,000 feet, the latter being in the Blue Ridge summits. Area, 336 square miles. Population, 10,216—white, 6,695; negro, 3,521; foreign born, 6. County seat, Madison. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 50 to 55 inches, and the temperature 50°.

**Madison**; county seat of Madison County on the Chesapeake and Ohio Railway.

**Madison**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Madison Mill**; branch, a small left-hand tributary to Roanoke River in Charlotte County.

**Madison Mills**; post village in Madison County.

**Madison Run**; post village in Orange County.

**Madisonville**; post village in Charlotte County.

**Madrid**; post village in Augusta County.

**Mad Sheep**; summit in Alleghany Front in Bath County.

**Mad Tom**; summit in Alleghany Front in Bath County.

**Maggie**; post village in Craig County.

**Maggoty**; creek, a small left-hand tributary to Staunton River in Franklin County.

**Maggoty**; gap in the western part of the Blue Ridge, caused by a small branch of Back Creek, in Roanoke County.

**Maggoty**; small right-hand tributary to Roanoke River in Franklin County.

**Magnet**; post village in Isle of Wight County.

**Magnolia**; post village in Nansemond County.

**Magruder**; post village in York County.

**Mahala**; post village in Loudoun County.

**Mahoney**; post village in Bland County.

**Maiden**; branch, a small left-hand tributary to North Fork of Holston River in Washington County.

**Maidens**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Maiden Spring**; creek, a left-hand tributary to Clinch River, rising in Tazewell County.

**Main Top Mountain**; summit in Nelson County.

**Major**; post village in Grayson County on the Chesapeake and Ohio Railway.

**Mallory**; branch, a small left-hand tributary to Nottoway River in Nottoway County.

**Mallory**; post village in Louisa County.

**Mallorys**; creek, a small right-hand branch of James River in Buckingham County.

**Mallow**; post village in Alleghany County on the Pennsylvania Railroad.

**Malone**; bridge across Rowanty Creek in Dinwiddie County.

**Malva**; post village in Mecklenburg County.

**Malvern Hill**; post village in Henrico County.

**Manassas**; gap in the Blue Ridge in Warren County.

**Manassas**; county seat of Prince William County on the Chesapeake and Ohio and the Southern railways. Population, 817.

**Manchester**; city in Chesterfield County, but independent in government; on the Atlantic Coast Line, Seaboard Air Line, and the Southern railroads. Population, 9,715.

**Manchester**; run, a small right-hand branch of James River in Prince George County.

**Maness**; post village in Scott County.

**Mangohick**; post village in King William County.

**Manila**; post village in Franklin County.

**Mannboro**; post village in Amelia County.

**Manquin**; post village in King William County.

**Manry**; post village in Southampton County.

**Mansfield**; post village in Louisa County.

**Mansion**; village in Campbell County.

**Mantapike**; post village in King and Queen County.

**Manteo**; post village in Buckingham County.

**Manteo**; station in Nelson County on the Chesapeake and Ohio Railway.

**Maple**; branch, a small right-hand tributary to New River in Pulaski County.

**Maple**; post village in Botetourt County.

**Maplegrove**; post village in Westmoreland County.

**Mapleton**; post village in Princess Anne County.

**Maplewood**; post village in Amelia County on the Southern Railway.

**Mappsburg**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Mappsville**; post village in Accomac County.

**Marble Valley**; post village in Augusta County.

**Marengo**; post village in Mecklenburg County.

**Marganna**; post village in Culpeper County.

**Marion**; county seat of Smyth County on the Norfolk and Western Railway.

Altitude, 2,124 feet. Population, 2,045.

**Marionville**; post village in Northampton County.

**Markham**; post village in Fauquier County on the Southern Railway. Altitude, 552 feet.

**Marksville**; post village in Page County on the Norfolk and Western Railway.

Altitude, 1,063 feet.

**Marl**; post village in Prince George County.

**Marlboro**; point on Potomac River in Stafford County.

**Marlboro**; post village in Frederick County.

**Marlbrook**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 1,162 feet.

**Marlbrook**; run, a small left-hand tributary to James River in Rockbridge County.

**Marmion**; post village in Rockbridge County.

**Marmora**; post village in Dinwiddie County.

**Marrowbone**; creek, a small left-hand tributary to Roanoke River in Appomattox County.

**Marrowbone**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Marsh**; run, a small left-hand branch of Rappahannock River in Fauquier County.

**Marshall**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.

**Marshall**; post village in Fauquier County on the Southern Railway.

**Marshall**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Marsh Market**; post village in Accomac County.

**Martin**; branch, a small left-hand tributary to Roanoke River in Charlotte County.

**Martin**; creek, a right-hand branch of Powell River in Lee County.

**Martin**; creek, a small left-hand tributary to Roanoke River in Appomattox County.

**Martin**; village in Henry County.

**Martins Store**; post village in Halifax County.

**Martinsville**; county seat of Henry County; on the Danville and Western and the Norfolk and Western railways. Altitude, 984 feet. Population, 2,384.

**Marumsco**; creek, a small right-hand branch of Potomac River in Prince William County.

**Marye**; a post village in Spottsylvania County.

**Mary Gray**; summit in Augusta County.

**Marysville**; post village in Campbell County. Altitude, 525 feet.

**Maryus**; post village in Gloucester County.

**Masada**; post village in Washington County.

**Mascot**; post village in King and Queen County.

**Mason**; creek, a small left-hand branch of Roanoke River in Roanoke County.

- Mason;** creek, a small right-hand tributary to Roanoke River in Roanoke County.
- Mason;** creek in Princess Anne County emptying into Willoughby Bay.
- Mason;** island in Potomac River in Loudoun County.
- Mason Cove;** small branch of Mason Creek tributary to Roanoke River in Roanoke County.
- Mason Knob;** summit in Roanoke County. Elevation, 3,217 feet.
- Masons Depot;** post village in Sussex County on the Southern Railway.
- Masons Store;** county seat of Russell County.
- Massanetta Springs;** village in Rockingham County.
- Massanutten;** mountains in the Shenandoah Valley between the forks of Shenandoah River. Elevation, 1,500 to 2,500 feet.
- Massanutton;** post village in Page County.
- Massaponax;** river, a small right-hand branch of Rappahannock River in Spottsylvania County.
- Massaponax;** post village in Spottsylvania County.
- Massey;** post village in Accomac County.
- Massie Mountain;** summit in Nelson County.
- Massies Mill;** post village in Nelson County.
- Masters;** post village in Alleghany County.
- Mat;** river, a small right-hand tributary to Mattaponi River in Spottsylvania County.
- Mathews;** county, situated in the eastern part of the State on the west coast of Chesapeake Bay. The surface is level and but little elevated above the sea. Area, 92 square miles. Population, 8,239—white, 5,844; negro, 2,395; foreign-born, 13. County seat, Mathews. The mean magnetic declination in 1900 was 4° 57'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.
- Mathews;** creek, a small right-hand tributary to James River in Buckingham County.
- Mathews;** county seat of Mathews County.
- Mathias Point;** post village in King George County.
- Matilda;** post village in Bedford County.
- Matoaca;** post village in Chesterfield County on the Chesapeake and Ohio Railway.
- Matta;** river, a small right-hand branch of Mattaponi River in Caroline County.
- Mattaponi;** river, heading in the Piedmont region and flowing southeast to its junction with the Pamunkey to form York River; navigable to Mundy Bridge, a distance of 55 miles.
- Mattoax;** post village in Amelia County on the Southern Railway.
- Mattox;** creek, a small right-hand branch of Potomac River in Westmoreland and King George counties.
- Matts;** creek, a small right-hand branch of James River in Bedford County.
- Mauck;** post village in Page County.
- Maurertown;** post village in Shenandoah County on the Baltimore and Ohio Railroad. Altitude, 788 feet.
- Mauzy;** village in Rockingham County.
- Max;** post village in Carroll County.
- Max Meadows;** post village in Wythe County on the Norfolk and Western Railway. Altitude, 2,015 feet.
- Maxwell;** post village in Tazewell County, on the Norfolk and Western Railway. Altitude, 2,356 feet.
- Maxwelton;** post village in Halifax County.
- May;** creek, a small left-hand branch of James River in Nelson County.
- Mayberry;** post village in Patrick County.
- Maybrook;** post village in Giles County.
- Mayland;** village in Rockingham County.

**Mayo**; post village in Halifax County.

**Mayoforge**; village in Patrick County.

**Mays**; mountain in Wythe County. Elevation, 2,500 to 2,849 feet.

**Maywood**; post village in Craig County.

**Meade**; post village in Essex County.

**Meadow**; small right-hand branch of Potomac River in Stafford County.

**Meadow**; bridge across Chickahominy River in Hanover County.

**Meadow**; creek, a small right-hand tributary to James River in Buckingham County.

**Meadow**; creek, a small right-hand tributary to James River in Craig County.

**Meadow**; creek, a small right-hand tributary to New River in Montgomery County.

**Meadow**; fork, a small right-hand fork of Straight Creek in Lee County.

**Meadow**; run, a small right-hand tributary to New River in Floyd County.

**Meadow**; run, a small left-hand tributary to James River in Highland County.

**Meadowcreek**; post village in Grayson County.

**Meadowdale**; post village in Highland County.

**Meadow Mills**; post village in Frederick County.

**Meadows of Dan**; post village in Patrick County.

**Meadow Station**; post village in Henrico County.

**Meadowview**; post village in Washington County on the Norfolk and Western Railway. Altitude, 2,138 feet.

**Meadowville**; post village in Chesterfield County.

**Meadville**; post village in Halifax County.

**Mears**; post village in Accomac County.

**Mearsville**; post village in Accomac County.

**Mecca**; post village in Pulaski County.

**Mechanicsburg**; town in Bland County. Population, 113.

**Mechanicsville**; post village in Loudoun County.

**Mechum**; creek, a small left-hand tributary to James River in Albemarle and Fluvanna counties.

**Mechumps**; creek, a small right-hand branch of Pamunkey River.

**Mechum River**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Mecklenburg**; county, situated in the southern part of the State in the eastern part of the Piedmont region, bordering the North Carolina line. It has a rolling surface, and elevated only about 300 to 500 feet. Area, 640 square miles. Population, 26,551—white, 10,353; negro, 16,198; foreign born, 64. County seat, Boydton. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 to 60 inches, and the temperature 55° to 60°. The county is traversed by the Seaboard Air Line and the Southern railways.

**Medina**; village in Washington County.

**Medley**; village in Roanoke County.

**Medlock**; post village in Louisa County.

**Meetinghouse**; small left-hand branch of Slate Creek in Buchanan County.

**Meetze**; post village in Fauquier County on the Southern Railway.

**Meherrin**; post village in Lunenburg County on the Southern Railway. Altitude, 589 feet.

**Meherrin**; river, a head branch of Chowan River in southeastern part of the State.

**Melfa**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Melita**; post village in Buckingham County.

**Melrose**; village in Rockingham County.

**Meltons**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 519 feet.

**Menchville**; post village in Warwick County on the Chesapeake and Ohio Railway.

**Mendota**; post village in Washington County on the Virginia and Southwestern Railway.

**Menla**; post village in Pittsylvania County.

**Mentow**; post village in Bedford County.

**Mercerville**; post village in Louisa County.

**Meredithville**; post village in Brunswick County.

**Meridian**; post village in Dinwiddie County.

**Meriwether**; post village in Pittsylvania County.

**Merrifield**; post village in Fairfax County.

**Merrimac**; post village in Culpeper County.

**Merrypoint**; post village in Lancaster County.

**Messick**; post village in York County.

**Messongo**; post village in Accomac County.

**Metomkin**; point on Potomac River in King George County.

**Metomkin**; post village in Accomac County.

**Meyerhoeffers Store**; village in Rockingham County.

**Meyrick**; village in Bedford County.

**Michaux**; post village in Powhatan County.

**Middle**; creek, a small right-hand tributary to James River in Craig and Botetourt counties.

**Middle**; creek, a small right-hand branch of Clinch River in Tazewell County.

**Middle**; mountain in Craig County.

**Middle**; mountain in Rockbridge County.

**Middle**; mountains in Augusta County.

**Middle**; mountains in Highland County. Elevation, 3,500 to 4,000 feet.

**Middle**; mountains in Page County. Elevation, 2,000 to 2,500 feet.

**Middle**; river, a branch of Shenandoah River in Augusta County.

**Middle**; river, a small right-hand tributary to Potomac River in Fairfax County.

**Middle**; run, a small right-hand tributary to Rappahannock River in Greene County.

**Middlebrook**; post village in Augusta County.

**Middleburg**; town in Loudoun County. Population, 296.

**Middle Elk**; creek, a small right-hand branch of Knox Creek, rising in Buchanan County.

**Middle Fox**; creek, a small right-hand tributary to New River in Grayson County.

**Middle Ridge**; mountains in Franklin County.

**Middlesex**; county, situated in the eastern part of the State on the south side of Rappahannock River, and extending to the west shore of Chesapeake Bay. The surface is level and but little elevated. Area, 156 square miles. Population, 8,220—white, 3,684; negro, 4,536; foreign born, 6. County seat, Saluda. The mean magnetic declination in 1900 was 4° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.

**Middletown**; town in Frederick County on the Baltimore and Ohio Railroad. Altitude, 660 feet. Population, 423.

**Midland**; post village in Fauquier County on the Southern Railway.

**Midlothian**; post village in Chesterfield County on the Southern Railway.

**Midvale**; post village in Rockbridge County on the Norfolk and Western Railway.

**Midway**; post village in Halifax County.

**Midway**; small right-hand tributary to Levisa Fork in Buchanan County.

**Midway Mills**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Mike**; post village in Campbell County.

**Mila**; post village in Northumberland County.

**Mile**; run, a small right-hand branch of Shenandoah River in Rockingham County.



- Milford**; post village in Caroline County on the Richmond, Fredericksburg and Piedmont Railroad.
- Mill**; small right-hand branch of Roanoke River in Roanoke County.
- Mill**; small branch of Walker Creek in Giles County.
- Mill**; branch, a small left-hand tributary to Roanoke River in Bedford County.
- Mill**; small right-hand branch of Powell River in Wise County.
- Mill**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Mill**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.
- Mill**; creek, a small left-hand branch of South Fork of Holston River in Washington County.
- Mill**; creek, a small left-hand tributary to Clinch River, rising in Scott County.
- Mill**; creek, a small right-hand tributary to New River in Montgomery County.
- Mill**; creek, a small right-hand branch of Wolf Creek, a tributary to New River in Giles County.
- Mill**; creek, a small right-hand branch of Guest River in Wise County.
- Mill**; creek, a small right-hand branch of Rappahannock River in Caroline County.
- Mill**; creek, a small left-hand tributary to James River in Amherst and Rockbridge counties.
- Mill**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.
- Mill**; creek, a small right-hand branch of Powell River in Lee County.
- Mill**; creek, a small right-hand tributary to Jackson River in Craig County.
- Mill**; creek, a small left-hand branch of Shenandoah River in Rockingham County.
- Mill**; creek, a small left-hand branch of James River in Botetourt County.
- Mill**; creek, a small right-hand tributary to James River in Botetourt County.
- Mill**; creek, a small right-hand tributary to Roanoke River in Franklin County.
- Mill**; creek, a small right-hand branch of Clinch River in Tazewell and Russell counties.
- Mill**; creek, a small right-hand tributary to Shenandoah River in Page County.
- Mill**; gap in Little Mountains caused by East Branch, a left-hand tributary to James River, in Highland County.
- Mill**; mountains in Bath, Rockbridge, and Alleghany counties. Elevation, 2,000 feet.
- Mill**; post village in Carroll County.
- Mill**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Mill or North Buckskin**; creek, a small right-hand tributary to Appomattox River in Amelia County.
- Millbank**; post village in Prince Edward County.
- Millboro**; post village in Bath County on the Chesapeake and Ohio Railway. Altitude, 1,680 feet.
- Millboro Spring**; post village in Bath County.
- Millburn**; post village in Buckingham County.
- Milldale**; post village in Warren County.
- Millenbeck**; post village in Lancaster County.
- Miller**; branch, a small right-hand tributary to Jackson River in Alleghany County.
- Miller**; creek, a small left-hand tributary to New River in Wythe County.
- Miller**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.
- Miller**; run, a small right-hand branch of James River in Buckingham County.
- Millers**; cove in Roanoke County.
- Millers**; creek, a small right-hand tributary to New River in Wythe County.
- Millers**; ford in Roanoke River in Pittsylvania County.
- Millers**; mountain in Bedford County. Elevation, 1,413 feet.
- Millers Knob**; summit in Rockingham County.

- Millers Tavern**; post village in Essex County.
- Millgap**; post village in Highland County.
- Millington**; post village in Albemarle County.
- Mill Mountain**; summit in Roanoke County. Elevation, 1,721 feet.
- Mill Mountain**; summit on State line in Shenandoah County; extending into Hardy County, W. Va.
- Mill Ridge**; mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.
- Mills**; creek, a small right hand tributary to Shenandoah River in Augusta County.
- Mills**; mountains in Botetourt and Roanoke counties. Elevation, 1,500 to 2,806 feet.
- Millstone**; small right-hand branch of Clinch River in Tazewell County.
- Millwood**; post village in Clarke County on the Baltimore and Ohio Railroad.
- Milnesville**; post village in Augusta County.
- Milt**; post village in Lee County.
- Mine**; creek, a small right-hand tributary to New River in Carroll County.
- Mine**; mountain in Rockingham County. Elevation, 2,500 feet.
- Mine**; run, a small right-hand tributary to Rappahannock River in Orange County.
- Minebank**; post village in Frederick County.
- Mineral**; post village in Louisa County.
- Minerun**; post village in Orange County.
- Minerva**; post village in Carroll County.
- Mingo**; village in Franklin County.
- Mink Hill**; sand hill in Princess Anne County near the eastern coast.
- Minneola**; post village in Pittsylvania County.
- Minnieville**; post village in Prince William County.
- Minor**; post village in Essex County.
- Mint Spring**; post village in Augusta County on the Baltimore and Ohio Railroad.
- Miona**; post village in Accomac County.
- Mirafork**; post village in Floyd County.
- Miry**; run, a small right-hand branch of Appomattox River in Dinwiddie County.
- Miskimon**; post village in Northumberland County.
- Mitchell Knob**; summit in Carroll County. Altitude, 3,240 feet.
- Mitchells**; post village in Culpeper County on the Southern Railway.
- Mizphia**; post village in Lunenburg County.
- Moab**; village in Washington County.
- Mobjack**; post village in Mathews County.
- Moccasin Ridge**; mountains in Scott and Russell counties. Elevation, 2,500 feet.
- Model**; village in Rockingham County.
- Modest**; creek, a small right-hand tributary to Nottoway River in Lunenburg County.
- Modesttown**; post village in Accomac County.
- Modoc**; village in Henry County.
- Moffats Creek**; post village in Augusta County.
- Moffet**; post village in Halifax County on the Southern Railway.
- Moffets**; creek, a small left-hand tributary to James River in Rockbridge and Augusta counties.
- Moffett**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Mohawk**; creek, a small right-hand branch of James River in Powhatan County.
- Mohea**; post village in Warwick County.
- Mohemenco**; post village in Powhatan County.
- Mole**; hill in Rockingham County.
- Molina**; post village in Warren County.
- Moll**; creek, a small left-hand tributary to Clinch River, rising in Russell County.
- Molley**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Molusk**; post village in Lancaster County.
- Monarat**; post village in Carroll County.



**Monasco**; mountain in Nelson County.

**Monaskon**; post village in Lancaster County.

**Monday**; post village in Floyd County.

**Moneta**; post village in Bedford County.

**Monitor**; post village in Amherst County.

**Monmouth**; post village in Rockbridge County.

**Monrovia**; post village in Orange County.

**Montague**; post village in Essex County.

**Montebello**; post village in Nelson County.

**Montethville**; post village in Stafford County.

**Monterey**; county seat of Highland County. Population, 246. Altitude, 3,008 feet.

**Monterey**; mountains in Highland County. Elevation, 3,000 to 3,500 feet.

**Montevideo**; post village in Rockingham County on the Chesapeake Western Railway.

**Montezuma**; village in Rockingham County.

**Montfort**; village in Orange County.

**Montgomery**; county, situated in the western part of the State in the Appalachian Valley. Its surface consists in part of undulating country with some parallel ridges and valleys separating them. It is drained by Roanoke River. The altitude ranges from 1,200 to 3,000 feet. Area, 394 square miles. Population, 15,852—white, 12,927; negro, 2,925; foreign born, 37. County seat Christiansburg. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Montgomery**; post village in Washington County on the Norfolk and Western Railway. Altitude, 1,990 feet.

**Montgomery Knob**; summit in Rich Patch Mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.

**Montgomery Springs**; post village in Montgomery County.

**Montpelier**; post village in Hanover County on the Southern Railway.

**Montross**; county seat of Westmoreland County.

**Montvale**; post village in Bedford County on the Norfolk and Western Railway.

**Moody**; post village in Hanover County.

**Moomaw**; village in Roanoke County.

**Moore**; small right-hand branch of Beaver Creek, rising in Washington County.

**Moore**; creek, a small left-hand tributary to James River in Albemarle County.

**Moore**; creek, a small right-hand tributary to James River in Rockbridge and Powhatan counties.

**Moores Mill**; post village in Henry County.

**Moores Store**; post village in Shenandoah County.

**Moorings**; post village in Surry County on the Surry, Sussex and Southampton Railroad.

**Moormans**; river, a small left-hand tributary to James River in Albemarle County.

**Moormans River**; post village in Albemarle County.

**Moran**; post village in Lancaster County on the Norfolk and Western Railway.

**Moreland**; gap in Short Mountains, caused by Gap Creek, in Shenandoah County.

**Morgan**; post village in Scott County.

**Morly Mountain**; summit in Amherst County.

**Morris**; hill in Alleghany County.

**Morris Church**; post village in Campbell County.

**Morris Knob**; summit in Tazewell County. Elevation, 4,510 feet.

**Morrison**; post village in Warwick County.

**Morrisonville**; post village in Loudoun County.

**Morrisville**; post village in Fauquier County.

**Mortons**; ford of Rapidan River in Culpeper County.

**Morven**; post village in Amelia County.

**Mosby**; post village in Fauquier County.

**Moscow**; post village in Augusta County.

**Moseley**; post village in Buckingham County on the Farmville and Powhatan and the Southern railroads.

**Moseley Mountain**; summit in Bedford County. Elevation, 1,268 feet.

**Moseleys Junction**; post village in Powhatan County on the Farmville and Powhatan Railroad.

**Mossing Ford**; post village in Charlotte County.

**Mossneck**; post village in Caroline County.

**Mossy**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Mossy**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Mossycreek**; post village in Augusta County on the Chesapeake Western Railway.

**Motleys**; post village in Pittsylvania County on the Southern Railway.

**Mount**; creek, a small right-hand branch of Rappahannock River in Caroline County.

**Mount**; post village in Stafford County.

**Mountain**; branch, a small left-hand tributary of James River in Rockbridge County.

**Mountain**; branch, a small left-hand tributary to Roanoke River in Appomattox County.

**Mountain**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Mountain**; fork, a small right-hand tributary to Clinch River in Scott County.

**Mountain**; lake in Giles County.

**Mountain**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Mountain**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Mountain**; run, a small right-hand tributary to Rappahannock River in Orange County.

**Mountain Falls**; post village in Frederick County.

**Mountaingap**; post village in Loudoun County.

**Mountaingrove**; post village in Bath County.

**Mountain Lake**; post village in Giles County.

**Mountain Road**; post village in Halifax County.

**Mountain Valley**; post village in Henry County.

**Mountainview**; post village in Stafford County.

**Mountairy**; post village in Pittsylvania County.

**Mount Alto**; summit in Albemarle County.

**Mount Athos**; post village in Campbell County.

**Mount Carmel**; post village in Halifax County.

**Mountcastle**; post village in New Kent County on the Chesapeake and Ohio Railway.

**Mount Clifton**; village in Shenandoah County.

**Mount Clinton**; post village in Rockingham County.

**Mount Crawford**; town in Rockingham County on the Baltimore and Ohio Railroad. Altitude, 1,171 feet. Population, 330.

**Mountcross**; post village in Pittsylvania County.

**Mount Erin**; summit in Fairfax County.

**Mountfair**; post village in Albemarle County.

**Mount Field**; branch, a small right-hand tributary to Roanoke River in Pittsylvania County.

**Mount Gilead**; post village in Loudoun County.

**Mount Holly;** post village in Westmoreland County.

**Mount Jackson;** town in Shenandoah County on the Southern and the Baltimore and Ohio railroads. Altitude, 916 feet. Population, 472.

**Mount Landing;** post village in Essex County.

**Mount Laurel;** post village in Halifax County.

**Mount Leigh;** post village in Prince Edward County.

**Mount Meridian;** post village in Augusta County.

**Mount Olive;** post village in Shenandoah County.

**Mount Pleasant;** post village in Spottsylvania County on the Baltimore and Potomac Railroad.

**Mount Pleasant;** summit in Amherst County. Elevation, 4,098 feet.

**Mount Sidney;** town in Augusta County on the Baltimore and Ohio Railroad. Altitude, 1,258 feet. Population, 197.

**Mount Solon;** post village in Augusta County.

**Mount Vernon on the Potomac;** post village in Fairfax County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Mountville;** post village in Loudoun County.

**Mount Vinco;** post village in Buckingham County.

**Mount Williams;** post village in Frederick County.

**Mount Zion;** post village in Campbell County.

**Mouth of Wilson;** post village in Grayson County.

**Muckcross;** post village in Mecklenburg County.

**Mud;** creek, a small left-hand branch of Powell River in Lee County.

**Mud;** creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Mud;** fork, a small left-hand tributary to New River, rising in Grayson County.

**Mud;** fork, a small tributary to Bluestone River in Tazewell County.

**Mud;** run, a small left-hand tributary to James River in Amherst County.

**Muddy;** small creek emptying into North Bay in Princess Anne County.

**Muddy;** creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Muddy;** creek, a small left-hand branch of Rappahannock County.

**Muddy;** creek, a small left-hand tributary to Shenandoah River in Rockingham County.

**Muddy;** creek, a small right-hand tributary to James River in Buckingham County.

**Muddy;** creek, a small right-hand branch of James River in Powhatan and Cumberland counties.

**Muddy;** run, a small left-hand tributary to James River in Bath County.

**Muddy;** run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Mud Hole;** gap in Three Top Mountains, caused by Little Passage Creek.

**Mud Lick;** creek, a small right-hand branch of Clinch River in Tazewell County.

**Mud Lick;** creek, a small right-hand branch of Roanoke River in Roanoke County.

**Mud Lick;** creek, a small right-hand tributary to Powell River in Wise County.

**Mulberry;** creek, a small left-hand tributary to Roanoke River in Appomattox County.

**Mulberry Island;** post village in Warwick County.

**Mulch;** post village in Richmond County.

**Mullin;** small right-hand branch of Slate Creek in Buchanan County.

**Mumpower;** village in Washington County.

**Munden;** post village in Princess Anne County on the Norfolk and Southern Railroad.

**Mundy Point;** post village in Northumberland County.

**Mundys;** post village in Amherst County.

**Munford;** post village in Botetourt County.

**Munson Hill;** summit in Fairfax County.

**Murat**; post village in Rockbridge County.

**Murray**; gap in western part of the Blue Ridge, caused by a small branch of Back Creek, in Roanoke County.

**Murray Knob**; summit in Franklin County.

**Murrill**; gap between Taylors and McFalls mountains in Bedford County.

**Murtleville**; post village in Stafford County.

**Muse**; post village in Augusta County.

**Museville**; post village in Pittsylvania County.

**Musselman**; post village in Stafford County.

**Myndus**; post village in Nelson County.

**Myra**; fork, a small right-hand tributary to New River in Floyd County.

**Myron**; post village in Prince William County.

**Myrtle**; post village in Nansemond County on the Norfolk and Western Railway.

**Nace**; post village in Botetourt County.

**Naffs**; post village in Franklin County.

**Nahor**; post village in Fluvanna County.

**Nain**; post village in Frederick County.

**Naked**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Naked**; creek, a small right-hand branch of Shenandoah River between Page and Rockingham counties.

**Naked**; mountain in Nelson County.

**Naked**; mountain in Fauquier County. Elevation, 750 to 1,250 feet.

**Nameless**; post village in Campbell County.

**Namozine**; creek, a small right-hand branch of Appomattox River between Amelia and Dinwiddie counties.

**Namozine**; post village in Amelia County.

**Nandua**; post village in Accomac County.

**Nansemond**; county, situated in the southeastern part of the State on the Atlantic plain. It includes the western portion of the great Dismal Swamp with the bluffs and high ground bordering on the west. The high parts of the county consist of undulating country, rarely exceeding 100 feet in altitude. Area, 393 square miles. Population, 23,078—white, 10,115; negro, 12,962; foreign born, 88. County seat, Suffolk. The mean magnetic declination in 1900 was  $3^{\circ} 27.5'$ . The mean annual rainfall is 40 to 50 inches, and the temperature 55 to  $60^{\circ}$ . The county is traversed by the Atlantic Coast Line, the Norfolk and Western, the Seaboard Air Line, the Suffolk and Carolina, the Seaboard and Roanoke, and the Southern railroads.

**Nansemond**; river, heading in the Atlantic plain and flowing northeast into James River just above its mouth. It is navigable to Town Point.

**Naola**; post village in Amherst County.

**Naples**; post village in Highland County.

**Napoleon**; village in Chesterfield County.

**Naptha**; post village in Brunswick County.

**Narcott**; post village in Floyd County.

**Narrow**; creek, a small right-hand tributary to Roanoke River in Roanoke County.

**Narrow Back**; mountains in Rockingham and Augusta counties. Elevation, 2,000 to 2,500 feet.

**Narrow Passage**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Narrows**; post village in Giles County on the New River, Holston and Western and the Norfolk and Western railroads. Altitude, 1,547 feet.

**Narseal**; post village in Amherst County.

**Naruna**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 646 feet.

**Nasbie**; post village in Dickenson County.

- Nash**; post village in Nelson County on the Farmville and Powhatan Railroad.
- Nasons**; post village in Orange County.
- Nassawadox**; post village in Northampton County on the New York, Philadelphia and Norfolk Railroad.
- Nasturtium**; post village in Floyd County.
- Natal**; post village in Pittsylvania County.
- Nathalie**; post village in Halifax County on the Norfolk and Western Railway. Altitude, 510 feet.
- National Soldiers Home**; post village in Elizabeth City County.
- Nat Lick**; branch, a small left-hand tributary to New River in Pulaski County.
- Natural Bridge**; post village in Rockbridge County on the Norfolk and Western and the Chesapeake and Ohio railways. Altitude, 736 feet.
- Navy**; post village in Fairfax County.
- Nawney**; small creek emptying into Back Bay in Princess Anne County.
- Naylors**; post village in Richmond County.
- Neabsco Mills**; post village in Prince William County on the Baltimore and Potomac Railroad.
- Neals**; creek, a small right-hand tributary to Appomattox River in Amelia County.
- Neapsco**; creek, a small right-hand branch of Potomac River in Prince William County.
- Neathery**; post village in Halifax County.
- Nebletts**; post village in Lunenburg County.
- Nebo**; post village in Smyth County.
- Neck**; creek, a small left-hand branch of New River in Pulaski County.
- Neck**; post village in Culpeper County.
- Need**; post village in Franklin County.
- Neenah**; post village in Westmoreland County.
- Neersville**; post village in Loudoun County.
- Negro**; post village in Hanover County.
- Negro**; run, a small left-hand tributary to York River, forming the boundary line between Orange and Louisa counties.
- Negroarm**; post village in Powhatan County on the Farmville and Powhatan Railroad. Altitude, 2,136 feet.
- Neill**; post village in King George County.
- Nellysford**; post village in Nelson County.
- Nelson**; county, situated in the central part of the State in the upper part of the Piedmont region, its western boundary being the summit of the Blue Ridge. The eastern part has a rolling surface, and the western part is greatly broken by short ridges, outliers of the Blue Ridge. It is drained by James River. The altitude varies from a few hundred feet up to 4,000 feet in the Blue Ridge summit. Area, 472 square miles. Population, 16,075—white, 10,403; negro, 5,672; foreign born, 39. County seat, Lovingsston. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 inches, and the temperature 55°. The county is traversed by the Southern and the Chesapeake and Ohio railways.
- Nelson**; ferry across Pamunkey River in Hanover County.
- Nelson**; fork, a small right-hand tributary to James River in Buckingham County.
- Nelson**; post village in Mecklenburg County on the Southern Railway.
- Nelsonia**; post village in Accomac County.
- Nest**; post village in Gloucester County.
- Nester**; post village in Carroll County.
- Nethers**; post village in Madison County.
- Netta**; post village in Brunswick County.
- Nettle**; creek, a small left-hand tributary to James River in Rockbridge County.
- Nettle**; mountains in Rockbridge County.

**Nettleridge**; post village in Patrick County.

**Neva**; village in Franklin County.

**New**; bridge across Chickahominy River in Hanover County.

**New**; river, formed by junction of North and South forks in Ashe County, N. C., flows north through Carroll, Wythe, Pulaski, and Giles counties, Va., into Kanawha River in Fayette County, W. Va.

**New Baltimore**; post village in Fauquier County.

**Newbern**; town in Pulaski County. Population, 152.

**New Canton**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Newcastle**; town and county seat in Craig County on the Chesapeake and Ohio Railway. Population, 299.

**New Church**; post village in Accomac County.

**Newfound**; river, a small right-hand tributary to York River in Hanover County.

**New Glasgow**; post village in Amherst County on the Southern Railway. Altitude, 714 feet.

**New Hampden**; post village in Highland County.

**New Hope**; town in Augusta County on the Potomac, Fredericksburg and Piedmont Railroad. Population, 124.

**Newington**; post village in Fairfax County.

**New Kent**; county, situated in the eastern part of the State on the Atlantic plain, between York and James rivers. The surface is low and level. Area, 233 square miles. Population, 4,865—white, 1,660; negro, 3,204; foreign born, 10. County seat, New Kent. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio and the Southern railways.

**New Kent**; county seat of New Kent County.

**Newland**; post village in Richmond County.

**New London**; post village in Caroline County.

**Newman Ridge**; mountains in the southeastern part of Lee County, extending southwest into Tennessee.

**Newmans**; post village in Hanover County on the Chesapeake and Ohio Railway.

**Newmarket**; town in Shenandoah County on the Southern Railway. Population, 684.

**New Plymouth**; post village in Lunenburg County.

**Newpoint**; post village in Mathews County.

**Newport**; post village in Giles County.

**Newport News**; city in Warwick County, but independent in government. Population, 19,635. It has a large shipbuilding plant and much commerce.

**Newriver Depot**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 1,768 feet.

**News Ferry**; post village in Halifax County on the Southern Railway.

**Newsoms**; post village in Southampton County on the Seaboard Air Line Railway.

**New Store**; post village in Buckingham County.

**Newton**; creek, a small right-hand branch of Eastern Branch of Elizabeth River in Princess Anne County.

**Newtown**; post village in King and Queen County.

**New Upton**; post village in Gloucester County.

**Newville**; post village in Prince George County.

**Nibbs**; creek, a small right-hand tributary to Appomattox River in Amelia County.

**Nicholls Knob**; summit in Alleghany County. Elevation, 3,573 feet.

**Nichols**; small right-hand branch of Potomac River in Fairfax County.

**Nick**; post village in Albemarle County.

**Nickelsville**; post village in Scott County.

**Nigger**; creek, a small right-hand branch of James River in Buckingham County.



**Nigger Head**; summit in Nelson County.

**Nigh Way**; small right-hand branch of Slate Creek in Buchanan County.

**Nile**; post village in Prince Edward County.

**Nimmo**; post village in Princess Anne County.

**Nimrod Hall**; post village in Bath County.

**Nindes Store**; post village in King George County.

**Nine Mile Spur**; mountains in Wise County.

**Nineveh**; post village in Warren County.

**Nininger**; village in Bedford County.

**Noble**; village in Wythe County.

**Noel**; post village in Hanover County on the Chesapeake and Ohio Railway.

**Nogo**; post village in Lunenburg County.

**Nokesville**; post village in Prince William County on the Southern Railway.

**Nokomis**; post village in Northumberland County.

**Nola**; post village in Franklin County.

**Noland**; post village in Halifax County.

**Nominygrove**; post village in Westmoreland County.

**Non Intervention**; post village in Lunenburg County.

**Nono**; post village in Lunenburg County.

**Nooning**; creek, a small left-hand branch of Appomattox River in Chesterfield County.

**Nordick**; village in Washington County.

**Nordyke**; creek, a small left-hand branch of North Fork of Holston River, rising in Washington County.

**Norfolk**; city in Norfolk County, but independent in government, on the Atlantic Coast Line, the Chesapeake and Ohio, the New York, Philadelphia and Norfolk, the Norfolk and Southern, the Norfolk and Western, the Seaboard Air Line, and the Southern railroads. Population, 46,624.

**Norfolk**; county, situated in the southeastern part of the State. It consists entirely of lowland, most of it marshy, and includes the greater portion of the great Dismal Swamp. Little of the county has an altitude above sea exceeding 20 feet. Area, 425 square miles. Population, 50,780—white, 19,113; negro, 31,600; foreign born, 772. County seat, Portsmouth. The mean magnetic declination in 1900 was  $4^{\circ} 7.5'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Atlantic Coast Line, the Seaboard and Roanoke, the Chesapeake and Ohio, the New York, Philadelphia and Norfolk, the Seaboard Air Line, the Southern, and the Norfolk and Western railroads.

**Norma**; post village in Westmoreland County.

**Norman**; post village in Culpeper County.

**Norris**; post village in Fauquier County.

**Norris**; run, a small right-hand branch of New River in Pulaski County.

**North**; bay, a lagoon on the southeastern coast separated from the Atlantic Ocean by a sand bar in Princess Anne County.

**North**; creek, a small right-hand tributary to James River in Appomattox and Botetourt counties.

**North**; mountains in Craig and Botetourt counties. Elevation, 2,000 to 3,000 feet.

**North**; mountains in Rockbridge and Alleghany counties. Elevation, 1,500 to 3,000 feet.

**North**; post village in Mathews County.

**North**; river, a left-hand branch of James River in Rockbridge County. The mean discharge at Glasgow is 985 cubic feet per second.

**North**; river, a left-hand branch of Shenandoah River in Augusta County. The mean discharge at Port Republic is  $970\frac{1}{2}$  cubic feet per second.

**North;** run, a small right-hand tributary to Chickahominy River in Henrico County.

**Northampton;** county, situated on the eastern peninsula of Virginia, extending into its southern end at Cape Charles. Its surface is low and level with much marshy land upon either side. Area, 232 square miles. Population, 13,770—white, 6,141; negro, 7,627; foreign born, 81. County seat, Eastville. The mean magnetic declination in 1900 was  $4^{\circ} 17.5'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the New York, Philadelphia and Norfolk Railroad.

**North Anna;** river, a small left-hand tributary to York River, forming the boundary between Orange, Louisa, and Spottsylvania counties.

**Northbranch;** post village in Grayson County.

**North Business;** creek, a small left-hand tributary to Walker Creek in Giles and Bland counties.

**North East;** creek, a left-hand tributary to York River in Spottsylvania County.

**Northfork;** post village in Loudoun County.

**North Garden;** post village in Albemarle County on the Southern Railway. Altitude, 634 feet.

**North Landing;** post village in Princess Anne County.

**North Landing;** river, rising in Princess Anne County and flowing south into Currituck Sound, North Carolina.

**North River;** gap between Narrow Back and Lookout mountains, caused by North River, in Augusta County.

**North River;** post village in Rockingham County.

**North Shady;** branch, a small right-hand tributary to New River in Floyd County.

**Northside;** town in Henrico County. Population, 584.

**North Tazewell;** town in Tazewell County. Population, 320.

**Northumberland;** county, situated in the eastern part of the State on the Atlantic plain, bordering Chesapeake Bay on the south side of the Potomac. Its surface is level and but little elevated above tide. Area, 235 square miles. Population, 9,846—white, 5,680; negro, 4,166; foreign born, 80. County seat, Heathsville. The mean magnetic declination in 1900 was  $4^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ .

**Northview;** post village in Mecklenburg County.

**Northwest;** canal connecting Dismal Swamp Canal with Northwest River in Norfolk County.

**North West;** marshy river rising in Norfolk County and flowing into Currituck Sound, North Carolina.

**Northwest;** post village in Norfolk County on the Norfolk and Southern Railroad.

**Norton;** town in Wise County on the Louisville and Nashville and the Norfolk and Western railroads, and the Wise Terminal Company. Altitude, 2,133 feet. Population, 654.

**Nortonsville;** post village in Albemarle County.

**Norvello;** post village in Mecklenburg County.

**Norwood;** post village in Nelson County on the Chesapeake and Ohio Railway.

**Nottoway;** county, situated in the central part of the State in the Piedmont region. It has an undulating surface. Altitude, 200 to 500 feet. Area, 304 square miles. Population, 12,366—white, 4,966; negro, 7,400; foreign born, 75. County seat, Nottoway. The mean magnetic declination in 1900 was  $3^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.

**Nottoway;** county seat in Nottoway County on the Norfolk and Western Railway.

**Nottoway;** river of southeast Virginia; one of the sources of Chowan River.

**Novum;** post village in Madison County.

**Nowlins Mill;** post village in Franklin County.



**Nuckols;** post village in Buckingham County.

**Nunley;** post village in Russell County.

**Nunn;** post village in Mecklenburg County.

**Nurneysville;** post village in Nansemond County.

**Nurseries;** post village in Lee County.

**Nutbush;** post village in Lunenburg County.

**Nutters;** mountains in Craig County. Elevation, 2,000 to 2,500 feet.

**Nuttree;** creek, a small left-hand tributary to Appomattox River in Chesterfield County.

**Nuttree;** post village in Chesterfield County.

**Nuttsville;** post village in Lancaster County.

**Ny;** river, a small branch of Mattaponi River in Spottsylvania and Caroline counties.

**Nye;** cove, in East River Mountain caused by Cove Creek.

**Oak;** post village in New Kent County.

**Oakdale;** post village in Rockbridge County.

**Oakforest;** post village in Cumberland County.

**Oakgrove;** post village in Westmoreland County.

**Oakhall;** post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Oakland;** post village in Louisa County.

**Oaklette;** post village in Norfolk County.

**Oaklevel;** village in Henry County.

**Oakley;** post village in Mecklenburg County.

**Oak Mountain;** branch, a small left-hand tributary to Roanoke River in Bedford County.

**Oakpark;** post village in Madison County.

**Oakridge;** post village in Nelson County on the Southern Railway.

**Oakton;** post village in Fairfax County.

**Oaktree;** post village in York County.

**Oakview;** post village in Mecklenburg County.

**Oakville;** post village in Appomattox County.

**Oakwood;** village in Rockingham County.

**Oatlands;** post village in Loudoun County.

**Obey;** creek, a small left-hand tributary to Clinch River in Scott County.

**Ocala;** post village in Carroll County.

**Occoquan;** creek, a small right-hand branch of Potomac River in Prince William County.

**Occoquan;** town in Prince William County on the Washington Southern Railway. Population, 297.

**Occupacia;** creek, a small right-hand branch of Rappahannock River in Essex County.

**Occupacia;** post village in Essex County.

**Oceana;** post village in Princess Anne County on the Norfolk and Western Railway.

**Oceanview;** post village in Norfolk County.

**Ochre;** post village in Chesterfield County on the Farmville and Powhatan Railroad.

**Ocoonita;** post village in Lee County on the Louisville and Nashville Railroad.

**Ocran;** post village in Lancaster County.

**Octagon;** post village in Brunswick County.

**Octavia;** post village in Buckingham County.

**Offley;** post village in Hanover County.

**Ogburn;** post village in Mecklenburg County.

**Ogden;** post village in Roanoke County.

- Ogle**; creek, a small right-hand tributary to Jackson River in Alleghany County.
- Oglesby**; small right-hand branch of New River in Grayson County.
- Oilville**; post village in Goochland County.
- Oklahoma**; post village in Carroll County.
- Oldchurch**; post village in Hanover County.
- Oldenplace**; post village in Dinwiddie County.
- Oldfield**; post village in Charles City County.
- Oldhams**; post village in Westmoreland County.
- Old Mount Airy**; summit in Wythe County. Elevation, 2,500 feet.
- Old Town**; creek, a small right-hand tributary to James River in Chesterfield County.
- Oldtown**; post village in Grayson County. Altitude, 2,485 feet.
- Old Woman**; creek, a small right-hand tributary to Roanoke River in Pittsylvania County.
- Olesko**; post village in Cumberland County.
- Olga**; post village in Amelia County.
- Olinger**; gap in Stone Mountain made by Powell River.
- Olinger**; post village in Lee County on the Louisville and Nashville Railroad.
- Olive**; post village in Culpeper County.
- Oliver**; mountains in Alleghany County. Elevation, 2,500 to 3,500 feet.
- Oliver**; post village in Hanover County.
- Oliveville**; post village in Nottoway County.
- Ollie**; post village in Alleghany County.
- Olo**; post village in Lunenburg County.
- Olympia**; post village in Smyth County.
- Oma**; post village in Culpeper County.
- Omega**; post village in Halifax County.
- Omohundro**; post village in Buckingham County.
- Onan**; post village in Nelson County.
- Onancock**; town in Accomac County. Population, 938.
- Onawan**; village in Rockingham County.
- O'Neal**; post village in Floyd County.
- Oneida**; branch, a small right-hand tributary to Wolf Creek in Tazewell County.
- One Mile**; creek, a small left-hand tributary to James River in Henrico County.
- Onion Mountain**; summit in Bedford County. Elevation, 3,828 feet.
- Onley**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.
- Ontario**; post village in Charlotte County on the Southern Railway.
- Onville**; post village in Stafford County.
- Opal**; post village in Fauquier County.
- Open**; fork, a small left-hand tributary to Russell Fork, rising in Dickenson County.
- Opequon**; creek, a left-hand branch of Shenandoah River in Clarke and Berkeley counties.
- Opequon**; post village in Frederick County.
- Ophelia**; post village in Northumberland County.
- Opie**; post village in Mecklenburg County.
- Opossum**; small right-hand branch of North Fork of Holston River, rising in Hawkins County, Tenn.
- Opossum**; creek, a small right-hand branch of James River in Campbell County.
- Opossum Hollow**; small left-hand tributary to New River in Pulaski County.
- Ora**; post village in Washington County.
- Oradell**; post village in Grayson County.
- Oral Oaks**; post village in Lunenburg County.
- Oranda**; post village in Shenandoah County.

**Orange**; county, situated in the central part of the State in the Piedmont region. It has a rolling surface broken only by a few ridges, outliers of the Blue Ridge. The altitude ranges from 200 to 300 feet up to 1,200 feet. Area, 349 square miles. Population, 12,571—white, 7,050; negro, 5,519; foreign born, 60; county seat, Orange. The mean magnetic declination in 1900 was  $3^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio, the Potomac, Frederick and Piedmont, and the Southern railroads.

**Orange**; county seat of Orange County on the Chesapeake and Ohio, the Potomac, Fredericksburg and Piedmont, and the Southern railroads. Altitude, 506 feet. Population, 536.

**Orb**; post village in Lunenburg County.

**Orbit**; post village in Isle of Wight County.

**Orchid**; post village in Louisa County.

**Ordsburg**; post village in Brunswick County.

**Ordway**; post village in Carroll County.

**Orebank**; post village in Buckingham County.

**Ore Bank Mountains**; summits in Botetourt County.

**Oreton**; post village in Wise County on the Virginia and Southwestern Railway.

**Orgainsville**; post village in Mecklenburg County.

**Orion**; post village in Greensville County.

**Oriskany**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Orkney Springs**; post village in Shenandoah County.

**Orlando**; post village in Prince William County.

**Orlean**; post village in Fauquier County.

**Oronoco**; post village in Amherst County.

**Orrix**; post village in Bedford County.

**Ortis**; post village in Albemarle County.

**Osage**; post village in Patrick County.

**Osborn**; small left-hand branch of Slate Creek in Buchanan County.

**Osborn**; ford in Scott County.

**Osborns Gap**; post village in Dickenson County.

**Osceola**; village in Washington County.

**Oscer**; village in Floyd County.

**Oslins**; post village in Buckingham County.

**Osso**; post village in King George County.

**Othma**; post village in Goochland County.

**Otho**; post village in Floyd County.

**Otter**; branch, a small left-hand tributary to Appomattox River in Chesterfield County.

**Otter**; creek, a small left-hand tributary to James River in Amherst County.

**Otter**; river, a left-hand tributary to Roanoke River, formed by two forks, North and South, in Bedford and Campbell counties.

**Otterdale**; post village in Chesterfield County.

**Otterhill**; village in Bedford County.

**Otter River**; post village in Campbell County on the Southern Railway. Altitude, 665 feet.

**Otterview**; post village in Bedford County.

**Ottobine**; post village in Rockingham County.

**Ottoman**; post village in Lancaster County.

**Otway**; post village in Nelson County.

**Oty**; post village in Montgomery County.

**Oven Top**; summit in Rappahannock County.

- Overall**; post village in Page County on the Norfolk and Western Railway. Altitude, 659 feet.
- Overall**; run, a small right-hand tributary to Shenandoah River in Page County.
- Overland**; post village in Mecklenburg County.
- Overly**; post village in Prince Edward County.
- Overton**; post village in Albemarle County.
- Owens**; creek, a small left-hand branch of James River in Nelson County.
- Owens**; creek, a small right-hand tributary to York River in Louisa County.
- Owens**; post village in King George County on the Southern Railway.
- Owenton**; post village in King and Queen County.
- Owl**; creek, a small right-hand branch of Meherrin River in Lunenburg County.
- Owl**; small creek in Princess Anne County, emptying into Atlantic Ocean through Rudy Inlet.
- Owl**; run, a small right-hand tributary to Potomac River in Fauquier County.
- Oxalis**; post village in King and Queen County.
- Ozeana**; post village in Essex County.
- Paces**; post village in Halifax County on the Southern Railway.
- Paddy**; creek, a small left-hand tributary to James River in Albemarle County.
- Paddy**; mountains in Frederick County, which extend into Shenandoah County, W. Va. Elevation, 2,500 feet.
- Paddy**; run, a small left-hand tributary to Shenandoah River in Frederick County.
- Pads**; creek, a small left-hand tributary to James River in Bath County.
- Paeonian Springs**; post village in Loudoun County on the Southern Railway.
- Page**; county, situated in the northwestern part of the State. It includes the valley of the South Fork of the Shenandoah, extending from the summit of Massanutten Mountain on the west to that of the Blue Ridge on the east. The altitude ranges from 600 feet along the Shenandoah to 4,000 feet on Stony Man and Hawks Bill summits of the Blue Ridge. Area is 317 square miles. Population, 13,794—white, 12,354; negro, 1,440; foreign born, 31. County seat, Luray. The mean magnetic declination in 1900 was 3° 50'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.
- Page Mountain**; summit in Amherst County.
- Paige**; post village in Caroline County.
- Paine**; run, a small right-hand tributary to Shenandoah River in Augusta County.
- Paineville**; post village in Amelia County.
- Paintbank**; post village in Craig County.
- Painter**; creek, a small left-hand branch of New River in Carroll County.
- Painter**; post village in Accomac County.
- Paint Lick**; mountains in Tazewell County. Elevation, 2,500 to 3,500 feet.
- Paintlick**; post village in Tazewell County.
- Palace**; post village in Dickenson County.
- Palestine**; post village in Washington County.
- Palls**; post village in King William County.
- Palmer**; post village in Lancaster County.
- Palmer Springs**; post village in Mecklenburg County.
- Palmetto**; post village in Patrick County.
- Palmyra**; county seat of Fluvanna County.
- Paloalto**; post village in Highland County.
- Pampa**; post village in Gloucester County.
- Pamplin City**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 679 feet.
- Pamunky**; post village in Orange County.

- Pamunkey**; river heading in the Piedmont region and flowing southeast to its junction with the Mattaponi, forming York River.
- Pamunsend**; creek, a small right-hand tributary to Rappahannock River in Caroline County.
- Panther**; creek, a small right-hand tributary to New River in Carroll County.
- Panther**; gap in Mill Mountains, caused by a creek in Bath County. Altitude, 1,594 feet.
- Panther**; mountain in Rockbridge County.
- Panther**; summit in Amherst County. Elevation, 1,500 to 2,000 feet.
- Panther Mountain**; summit in Botetourt County.
- Panther Ridge**; mountains in Alleghany County. Elevation, 2,000 to 2,500 feet.
- Paris**; mountains in Montgomery County. Elevation, 1,500 to 3,000 feet.
- Paris**; post village in Fauquier County.
- Parishville**; post village in Frederick County.
- Parites**; post village in Madison County.
- Park**; post village in Grayson County.
- Parker**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.
- Parkins Mill**; post village in Frederick County.
- Parksley**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.
- Parnassus**; post village in Augusta County.
- Parr**; post village in Botetourt County on the Chesapeake and Ohio Railway.
- Parridge**; run, a small left-hand branch of James River in Amherst County.
- Parrotts**; post village in Albemarle County.
- Parsells**; post village in Franklin County.
- Partlow**; post village in Spottsylvania County.
- Pass**; run, a small right-hand tributary to Shenandoah River in Page County.
- Passage**; creek, a small left-hand tributary to Shenandoah River in Shenandoah and Page counties.
- Passapatanzy**; post village in King George County.
- Passing**; post village in Caroline County.
- Pastoria**; post village in Accomac County.
- Patch**; creek, a small right-hand tributary to Powell River in Wise County.
- Path Ridge**; mountains in Rockingham County.
- Patrick**; county, which lies along the southern boundary of the State, its north-western boundary being the summit of the Blue Ridge escarpment. Its surface is rolling and broken, with a steep rise upon the southwest. Area, 489 square miles. Population, 15,403—white, 13,779; negro, 1,624. County seat, Stuart. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Danville and Western Railway.
- Patrick Springs**; post village in Patrick County on the Danville and Western Railway. Altitude, 1,305 feet.
- Patterson**; creek, a small right-hand tributary to James River in Botetourt County.
- Patterson**; mountains in Botetourt County. Elevation, 1,500 to 2,000 feet.
- Patterson**; post village in Wythe County on the Norfolk and Western Railway. Altitude, 1,132 feet.
- Patti**; post village in Franklin County.
- Pattonsville**; post village in Scott County. Altitude, 1,710 feet.
- Paulington**; village in Rockingham County.
- Paul Mountain**; summit in Amherst County. Elevation, 1,500 feet.
- Pauls**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Pauls Crossroads**; post village in Essex County.

**Paw Paw**; creek, a left-hand branch of Knox Creek, formed by two forks, Left and Right, in Buchanan County.

**Pax**; post village in Floyd County.

**Paxon**; post village in Loudoun County.

**Payne**; creek, a small right-hand tributary to James River in Buckingham and Cumberland counties.

**Paynes**; post village in Fluvanna County on the Chesapeake and Ohio Railway.

**Peach Bottom**; creek, a small right-hand branch of New River in Grayson County.

**Peach Bottom**; post village in Grayson County.

**Peach Grove Hill**; summit in Fairfax County.

**Peak**; creek, a small left-hand branch of New River, rising in Wythe County.

**Peak**; summit in Blue Ridge in Rappahannock County. Elevation, 2,953 feet.

**Peak**; summit in Massanutten Mountains in Rockingham County.

**Peak**; summit in Bedford County. Elevation, 3,875 feet.

**Peak**; summit in Tazewell County. Elevation, 4,230 feet.

**Peak Creek Knob**; summit in Draper Mountains. Elevation, 3,374 feet.

**Peakes Turnout**; post village in Hanover County.

**Peaks of Otter**; mountains in Bedford County. Elevation, 1,500 to 4,000 feet

**Peaksville**; post village in Bedford County.

**Peanut**; post village in Sussex County.

**Pearch**; post village in Bedford County on the Chesapeake and Ohio Railway.

**Pearis**; mountains in Giles County. Elevation, 2,000 to 3,500 feet.

**Pearisburg**; town and county seat of Giles County. Population, 464.

**Peatross**; post village in Pittsylvania County.

**Peavine Mountain**; summit in Nelson County.

**Peck**; post village in Carroll County.

**Peddler**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Pedlar**; gap in Amherst County.

**Pedlar**; river, a small left-hand branch of James River in Amherst County.

**Pedlar Hills**; mountains in Montgomery County. Elevation, 1,500 to 2,000 feet.

**Pedlar Mills**; post village in Amherst County.

**Pedlars**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Pedro**; post village in Essex County.

**Peeds**; post village in Westmoreland County.

**Peers**; post village in Goochland County.

**Pellitory**; point extending into Back Bay in Princess Anne County.

**Pelton**; post village in Shenandoah County.

**Pemberton**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Pembroke**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,618 feet.

**Pender**; post village in Fairfax County.

**Pendletons**; post village in Louisa County on the Chesapeake and Ohio Railway

**Penhook**; post village in Franklin County on the Southern Railway.

**Penicks**; post village in Bedford County.

**Penlan**; post village in Buckingham County on the Chesapeake and Ohio Railway.

**Penn**; small right-hand branch of Cripple Creek in Wythe County.

**Pennington**; gap made by the North Fork of Powell River in Stone Mountains.

**Pennington Gap**; town in Lee County on the Louisville and Nashville Railroad. Population, 399.

**Penn Laird**; post village in Rockingham County on the Chesapeake Western Railway.

**Penny**; post village in Mathews County.

- Penola**; post village in Caroline County on the Potomac, Fredericksburg and Piedmont Railroad.
- Penrith**; post village in Cumberland County.
- Penrose**; post village in Augusta County.
- Peola Mills**; post village in Madison County.
- Peppers**; ferry over New River in Pulaski County.
- Pera**; post village in Amherst County.
- Perdue**; post village in Montgomery County on the Farmville and Powhatan Railroad.
- Perkinsville**; post village in Goochland County.
- Pernello**; post village in Franklin County.
- Perriwinkle**; branch, a small right-hand tributary to New River in Carroll and Pulaski counties.
- Perrows**; post village in Campbell County.
- Perrowville**; post village in Bedford County.
- Perry**; creek, a small left-hand tributary to James River in Albemarle County.
- Perry**; mountain in Nelson County.
- Perth**; post village in Halifax County.
- Peter**; creek, a small left-hand branch of Roanoke River in Roanoke County.
- Peters**; creek, a small right-hand branch of James River in Bedford County.
- Peters**; creek, a small left-hand tributary to Roanoke River in Roanoke County.
- Peters**; mountains in Giles County. Elevation, 2,500 to 3,000 feet.
- Peters Creek**; post village in Patrick County.
- Petersburg**; city, situated in Dinwiddie County, but independent in government, on the Atlantic Coast Line, the Norfolk and Western, and the Seaboard Air Line railroads. Population, 21,810.
- Peters Hill**; summit in Craig County. Elevation, 2,000 feet.
- Peters Ridge**; mountains in Alleghany County.
- Petites**; gap in Blue Ridge in Bedford County.
- Petunia**; village in Wythe County.
- Peytonsbury**; post village in Pittsylvania County.
- Phelps**; branch, a small right-hand tributary to James River in Appomattox County.
- Phillipa**; small left-hand branch of Middle Fork of Holston River in Smyth County.
- Phillips**; post village in Floyd County on the Virginia and Southwestern Railway.
- Phillis**; post village in Mecklenburg County.
- Philomont**; post village in Loudoun County.
- Philpott**; post village in Henry County.
- Phoebus**; town in Elizabeth City County on the Chesapeake and Ohio Railway. Population, 2,094.
- Phone**; post village in Goochland County.
- Pianketank**; river, heading in Essex County and flowing southeast to Chesapeake Bay.
- Pickaway**; post village in Pittsylvania County.
- Piedmont**; post village in Bedford County.
- Pig**; point of land in Nansemond County, extending into James River.
- Pig**; river, a right-hand tributary to Roanoke River in Pittsylvania County.
- Pig**; run, a small left-hand tributary to James River in Bath County.
- Pigeon**; creek, a small right-hand branch of Powell River.
- Pigeon**; run, a small left-hand tributary to York River in Spottsylvania County.
- Pigg**; river, a right-hand branch of Roanoke River in Pittsylvania County.
- Pig Nut**; mountains in Fauquier County. Elevation, 750 to 1,000 feet.
- Pig River**; post village in Franklin County.
- Pike**; post village in Chesterfield County.



- Pike Knob**; summit in Carroll County. Elevation, 3,200 feet.
- Pilkinton**; post village in Powhatan County.
- Pilot**; mountains in Montgomery County. Elevation, 2,000 to 2,500 feet.
- Pilot**; post village in Montgomery County.
- Pilot Knob**; summit in Graysen County. Elevation, 3,021 feet.
- Pilot Mountain**; summit in Appomattox County.
- Pilot Mountain**; summit in Bedford County.
- Pimmit**; run, a small right-hand branch of Potomac River in Fairfax County.
- Pinckney**; post village in Highland County.
- Pine**; branch, a small right-hand tributary to New River in Carroll County.
- Pine**, fork, a small right-hand tributary to New River in Carroll and Floyd counties.
- Pine**; mountains in Botetourt and Rockbridge counties. Elevation, 1,500 to 2,500 feet.
- Pine**; mountains in Washington County. Elevation, 1,500 to 2,000 feet.
- Pine**; mountains in the southern part of Scott County, extending into Hawkins County, Tenn.
- Pine**; post village in Pulaski County.
- Pine**; run, a small left-hand branch of New River in Wythe and Pulaski counties.
- Pineapple**; post village in Spottsylvania County.
- Pine Ridge**; mountains in Botetourt County. Elevation, 1,500 feet.
- Pine Ridge**; mountains in Frederick County. Elevation, 1,000 feet.
- Pine Ridge**; mountains in Wythe County. Elevation, 2,500 feet.
- Pine Ridge**; summits in Augusta County.
- Pinero**; post village in Gloucester County.
- Pine Spur**; gap in the Blue Ridge in Franklin County.
- Pine Swamp**; creek, a small left-hand tributary to New River, rising in Grayson County.
- Pinetop**; post village in Orange County.
- Pinetta**; post village in Gloucester County.
- Pineview**; post village in Fauquier County.
- Piney**; creek, a small left-hand tributary to James River in Albemarle County.
- Piney**; mountains in Bath County.
- Piney**; mountains in Bedford County. Elevation, 2,000 feet.
- Piney**; mountains in Craig County.
- Piney**; river, a small left-hand tributary to James River between Nelson and Amherst counties.
- Piney**; run, a small right-hand branch of Potomac River in Loudoun County.
- Piney Knob**; summit in Rockbridge County.
- Piney Mountain**; summit in Amherst County.
- Piney Mountain**; summit in Appomattox County.
- Piney Mountain**; summit in Page County. Elevation, 1,500 feet.
- Pinnacle**; post village in Carroll County.
- Pinnacle**; summit in Cumberland Mountains in Lee County. Elevation, 2,500 feet.
- Pinner**; point on Elizabeth River in Norfolk County.
- Pinners**; post village in Norfolk County.
- Pinopolis**; post village in Southampton County.
- Piper**; gap in Carroll County.
- Piper**; gap in mountains in Patrick County.
- Pipers Gap**, post village in Carroll County.
- Pisgah**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,344 feet.
- Pistol**; small left-hand branch of Levisa Fork in Buchanan County.
- Pittston**; post village in Pittsylvania County.



**Pittsville**; post village in Pittsylvania County on the Southern Railway.

**Pittsylvania**; county, situated in the southern part of the State on the Atlantic plain, the northern limit being Roanoke River. The surface is undulating. The altitude ranges from 4,000 to 1,200 feet. Area, 986 square miles. Population, 46,894—white, 25,605; negro, 21,289; foreign born, 63. County seat, Chatham. The mean magnetic declination in 1900 was  $1^{\circ} 47.5'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern, the Danville and Western, and the Norfolk and Western railways.

**Pizarro**; post village in Floyd County.

**Plainview**; post village in King and Queen County.

**Plank Cabin**; creek, a small left-hand tributary to Clinch River in Scott County.

**Plantersville**; post village in Lunenburg County.

**Plasterburg**; post village in Smyth County.

**Plasterco**; post village in Washington County.

**Plato**; post village in Halifax County.

**Pleasantgrove**; post village in Lunenburg County.

**Pleasanthill**; post village in Tazewell County.

**Pleasantridge**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Pleasantshade**; post village in Greensville County on the Southern Railway.

**Pleasant Valley**; post village in Loudoun County on the Baltimore and Ohio Railroad. Altitude, 1,248 feet.

**Pleasantview**; post village in Amherst County.

**Pleasure House**; creek, a small left-hand branch of Lynn Haven River in Princess Anne County.

**Pluck**; post village in King George County.

**Plum**; branch, a small left-hand tributary to Roanoke River in Campbell County.

**Plum**; creek, a small left-hand branch of Clinch River in Tazewell County.

**Plum**; creek, a small right-hand branch of New River, rising in Montgomery County.

**Plumbranch**; post village in Campbell County.

**Plumpoint**; post village in New Kent County.

**Plymale**; post village in Bedford County.

**Po**; river, a small right-hand branch of Mattaponi River in Spottsylvania and Caroline counties.

**Poages Mill**; post village in Roanoke County.

**Poague**; run, a small left-hand tributary to James River in Rockbridge County.

**Pocahontas**; town in Tazewell County on the Norfolk and Western Railway. Altitude, 2,320 feet. Population, 2,789.

**Poco**; village in Shenandoah County.

**Pocoshock**; creek, a small right-hand tributary to James River in Chesterfield County.

**Poge Mill**; creek, a small left-hand branch of South Fork of Holston River in Washington County.

**Pohick**; bay, an arm of the Potomac River, extending into Fairfax County.

**Pohick**; run, a small right-hand tributary to Potomac River in Fairfax County.

**Poindexter**; post village in Louisa County.

**Point Eastern**; post village in Caroline County.

**Point Lookout**; mountains in Grayson County. Elevation, 3,000 to 4,623 feet.

**Point Pleasant**; post village in Bland County on the Pittsburg, Shawmut and Northern Railroad.

**Point Truth**; post village in Russell County.

**Pole Cat**; creek, a small left-hand tributary to New River in Wythe County.

**Polegreen**; post village in Hanover County.

**Pollard**; post village in Amelia County.

**Polo**; post village in King and Queen County.

**Pond**; gap in Little North Mountains in Augusta County. Altitude, 1,682 feet.

**Pond**; mountain in Smyth County. Elevation, 2,500 to 3,000 feet.

**Pond**; mountains in Fauquier County. Elevation, 1,500 to 2,500 feet.

**Pond**; run, a small right-hand tributary to Shenandoah River in Augusta County.

**Pondgap**; post village in Augusta County.

**Pond Hill**; summit in Montgomery County.

**Poney**; creek, a small right-hand branch of Pamunkey River in Hanover County.

**Pons**; post village in Isle of Wight County.

**Pony**; summits in Culpeper County. Elevation, 500 to 750 feet.

**Poo**; run, a small right-hand tributary to James River in Dinwiddie County.

**Poole**; post village in Brunswick County on the Norfolk and Ocean View Railroad.

**Poolville**; post village in Halifax County.

**Poor**; mountain in Roanoke and Montgomery counties. Elevation, 2,500 to 3,900 feet.

**Poor**; valley in Tazewell County.

**Poor**; valley lying along Clinch Mountain in Scott and Washington counties.

**Poor**; valley lying between Poor Valley Ridge and Stone Mountain in Lee County.

**Poore**; small right-hand branch of New River in Carroll County.

**Poor Valley Ridge**; mountains extending northeast and southwest in Lee County.

**Pope**; post village in Southampton County, on the Southern Railway.

**Pope Knob**; summit in Carroll County. Elevation, 3,039 feet.

**Popham**; run, a small right-hand tributary to Rappahannock River in Madison County.

**Poplar**; branch, a small right-hand tributary to New River in Montgomery County.

**Poplar**; creek, a small left-hand branch of Levisa Fork, rising in Buchanan County.

**Poplar**; post village in Nelson County.

**Poplar Camp**; creek, a small right-hand tributary to New River in Wythe and Carroll counties.

**Poplar Camp**; mountains in Carroll and Wythe counties. Elevation, 2,500 to 3,161 feet.

**Poplarhill**; post village in Giles County.

**Poplar Knob**; summit in Carroll County. Elevation, 3,166 feet.

**Poplarmount**; post village in Greensville County.

**Poquoson**; post village in York County.

**Porpoise**; point projecting into Back Bay in Princess Anne County.

**Port**; post village in Madison County.

**Port Conway**; post village in King George County.

**Porter**; ferry over New River in Wythe County.

**Porterfield**; run, a small right-hand tributary to Shenandoah River in Augusta County.

**Porters**; mountains in Botetourt and Bedford counties. Elevation, 1,500 to 2,000 feet.

**Port Haywood**; post village in Mathews County.

**Port Norfolk**; post village in Norfolk County on the Atlantic Coast Line Railroad.

**Port Republic**; post village in Rockingham County.

**Port Royal**; town in Caroline County on the Norfolk and Western Railway. Altitude, 1,093 feet. Population, 193.

**Portsmouth**; county seat of Norfolk County, but independent in government, on the Atlantic Coast Line, the Chesapeake and Ohio, the New York, Philadelphia and Norfolk, and the Seaboard Air Line railroads. Population, 17,427.

**Port Walthall**; post village in Chesterfield County.

**Posey**; post village in Floyd County.

**Possum**; small creek in Hanover County.

- Possum;** run, a small left-hand tributary to James River in Rockbridge County.
- Possum Jaw;** creek, a small right-hand branch of North Fork of Holston River in Smyth County.
- Postoak;** post village in Spottsylvania County.
- Potato;** post village in Grayson County.
- Potato;** run, a small right-hand tributary to Rappahannock River in Culpeper County.
- Potato Hill;** summit in Amherst County. Elevation, 1,000 feet.
- Potato Hill;** summit in Wise County.
- Poteet;** ford of Powell River in Lee County.
- Potomac;** creek, a small right-hand branch of Potomac River in Stafford County.
- Potomac;** post village in Prince William County.
- Potomac;** river of Maryland, Virginia, and West Virginia. It heads in West Virginia, in North and South branches. The North Branch rises near the Fairfax Stone, the southwestern point of Maryland, and flows northeast to Cumberland, where it turns to a southeastern course. A few miles farther down it is joined by the South Branch, and at Harpers Ferry, where it cuts through the Blue Ridge, by the Shenandoah; thence the river flows in a generally southeasterly course to its mouth in Chesapeake Bay at Point Lookout. The area of its drainage basin is 14,479 square miles, including the Shenandoah. It is navigable to Little Falls, in the District of Columbia.
- Potomac Mills;** post village in Westmoreland County.
- Potts;** creek, a right-hand branch of Jackson River in Alleghany County.
- Potts;** mountains in Craig and Alleghany counties. Elevation, 2,500 to 3,822 feet.
- Potts;** post village in Amherst County.
- Potts Creek;** post village in Alleghany County.
- Poulson;** post village in Accomac County.
- Pound;** gap in Pine Mountains in Wise County.
- Pound;** post village in Wise County.
- Pound;** river, a left-hand branch of Russell Fork, rising in Wise County.
- Pounding Mill;** creek, a small left-hand branch of Clinch River in Tazewell County.
- Pound Mill;** creek, a small left-hand branch of Knox Creek, rising in Buchanan County.
- Pounding Mill;** creek, a small left-hand tributary to James River in Alleghany County.
- Pounding Mill;** post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,140 feet.
- Poverty;** creek, a small right-hand tributary to New River in Pulaski and Montgomery counties.
- Poverty;** post village in Highland County.
- Powcan;** post village in King and Queen County.
- Powell;** gap in the Blue Ridge in Rockingham County.
- Powell;** gap in the Blue Ridge, caused by McFalls Branch, in Botetourt County. Altitude 1,906 feet.
- Powell;** mountains, extending from the southern part of Wise County along the boundary line of Scott and Lee counties into Hancock County, Tenn.
- Powell;** river, rising in Wise County and flowing southwest through Lee County into Tennessee, where it flows into Clinch River. It is formed by two forks, North and South.
- Powell Mountain;** summit in Nelson County.
- Powells;** creek, a small right-hand branch of Potomac River in Prince William County.
- Powells;** mountains in Shenandoah County.
- Powellton;** post village in Brunswick County.
- Powers;** post village in Clarke County.

**Powhatan**; county, situated in the central part of the State in the Piedmont region.

It is drained by James River, which flows along its southern boundary. The altitude ranges from 200 to 400 feet. Area, 284 square miles. Population, 6,824—white, 2,343; negro, 4,481; foreign born, 43. County seat, Powhatan. The mean magnetic declination in 1900 was  $3^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Farmville and Powhatan Railroad.

**Powhatan**; county seat of Powhatan County on the Farmville and Powhatan Railroad.

**Powhite**; creek, a small left-hand branch of Chickahominy River in Hanover County.

**Powhite**; creek, a small right-hand branch of James River in Chesterfield County.

**Prater**; creek, a small right-hand branch of Roanoke River in Franklin County.

**Prater**; post village in Buchanan County.

**Pratts**; post village in Madison County.

**Preacher**; creek, a small right-hand tributary to Powell River in Wise County.

**Preacher**; post village in Wise County on the Interstate Railroad.

**Prease**; village in Bedford County.

**Preston**; post village in Henry County on the Danville and Western Railroad. Altitude, 930 feet.

**Preston Knob**; summit in Franklin County. Elevation, 1,331 feet.

**Pretlow**; post village in Southampton County.

**Pretty**; creek, a small left-hand branch of James River in Botetourt County.

**Price**; mountains in Montgomery County. Elevation, 2,000 feet.

**Prices**; ford of Jackson River in Botetourt County.

**Prices**; mountains in Botetourt County. Elevation, 2,000 to 2,500 feet.

**Prices Fork**; post village in Montgomery County.

**Priddys**; post village in Albemarle County.

**Pridemore**; village in Lee County.

**Priest**; summit in Nelson County. Elevation, 4,080 feet.

**Prillamans**; post village in Franklin County.

**Prince**; post village in King and Queen County.

**Prince Edward**; county, situated in the central part of the State in the Piedmont region. The surface is undulating and the altitude ranges from 300 to 600 feet. Area, 345 square miles. Population, 15,045—white, 5,276; negro, 9,769; foreign born, 117. County seat, Farmville. The mean magnetic declination in 1900 was  $3^{\circ}$ . The mean annual rainfall is 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern, the Farmville and Powhatan, and the Norfolk and Western railroads.

**Prince George**; county, situated in the central part of the State on the Atlantic plain. It has a rolling surface with much marsh along the streams. The altitude ranges in the highest points to about 200 feet. Area, 302 square miles. Population, 7,752—white, 2,886; negro, 4,858; foreign born, 282. County seat, Prince George. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Western and the Atlantic Coast Line railroads.

**Prince George**; county seat of Prince George County.

**Princess Anne**; county, situated in the southeastern part of the State. It borders on the Atlantic Ocean and North Carolina, lying east of the great Dismal Swamp. It contains much marsh land, and on the whole lies very low, little of it exceeding 20 to 25 feet above sea level. Area, 285 square miles. Population, 11,192—white, 5,505; negro, 5,687; foreign born, 74. County seat, Princess Anne. The mean magnetic declination in 1900 was  $4^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Norfolk and Southern and the Virginia Beach railroads.

**Princess Anne**; county seat of Princess Anne County on the Norfolk and Southern Railroad.

**Prince William**; county, situated in the eastern part of the State in the Piedmont region. It has an undulating surface, rising in the western edge to the summit of the Blue Ridge, which forms the boundary. Most of the area of the county lies between 200 and 500 feet in altitude. Area, 353 square miles. Population, 11,112—white, 8,240; negro, 2,871; foreign born, 167. County seat, Manassas. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 45 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio, the Southern, and the Richmond, Fredericksburg and Potomac railroads.

**Printz Mill**; post village in Page County.

**Prise House Mountain**; summit in Botetourt County.

**Proffit**; post village in Albemarle County on the Southern Railway.

**Progress**; village in Franklin County.

**Prospect**; post village in Prince Edward County on the Norfolk and Western Railway. Altitude, 573 feet.

**Prospect Dale**; post village in Giles County.

**Prospect Hill**; post village in Fairfax County.

**Providence Forge**; post village in New Kent County on the Chesapeake and Ohio Railway.

**Pruntys**; village in Henry County.

**Pryor**; post village in Amherst County.

**Puckell**; creek, a small left-hand branch of Straight Creek in Lee County.

**Puckett**; post village in Patrick County.

**Pughs**; post village in Norfolk County on the Atlantic Coast Line Railroad.

**Pughs**; run, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Pughs Run**; post village in Shenandoah County.

**Pulaski**; county, situated in the western part of the State in the Appalachian Valley. It is limited on the east by New River, the northwest by Walker Mountain, and on the southwest by an arbitrary line. Its surface is undulating, with a few northeast and southwest ridges separated by valleys. The altitude ranges from 1,700 to 3,000 feet. Area, 338 square miles. Population, 14,609—white, 11,372; negro, 3,237; foreign born, 88. County seat, Pulaski City. The mean magnetic declination in 1900 was 1° 15'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Pulaski City**; county seat of Pulaski County on the Norfolk and Western Railway. Altitude, 1,904 feet. Population, 2,813.

**Pullens**; post village in Pittsylvania County.

**Pulliam**; branch, a small left-hand tributary to Roanoke River in Campbell County.

**Punch Bowl Mountain**; summit in the Blue Ridge.

**Pungo**; ferry over North Landing River between Norfolk and Princess Anne counties.

**Pungo**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Pungoteague**; post village in Accomac County.

**Purcellville**; post village in Loudoun County on the Southern Railway. Altitude, 553 feet.

**Purchase**; post village in Scott County.

**Purchase Ridge**; mountains in Scott County.

**Purgatory**; creek, a small left-hand branch of James River in Botetourt County.

**Purgatory**; mountains in Botetourt County. Elevation, 1,500 to 2,500 feet.

**Purity**; village in Franklin County.

**Purvis**; gap in Nelson County.

**Push**; post village in Mecklenburg County.

**Putneys**; post village in Prince Edward County.

**Quail**; post village in Louisa County.

**Quantico**; creek, a small right-hand branch of Potomac River in Prince William County.

**Queensberry Knob**; summit in Carroll County. Elevation, 2,935 feet.

**Queens Knob**; summit in Wythe County. Elevation, 3,000 to 3,204 feet.

**Quicksburg**; post village in Shenandoah County on the Southern Railway.

**Quillin**; post village in Norfolk County.

**Quinby**; post village in Accomac County.

**Quinque**; post village in Greene County.

**Quinton**; post village in New Kent County on the Southern Railway.

**Quoit**; post village in Floyd County.

**Rabat**; post village in Halifax County.

**Raccoon**; creek, a small left-hand tributary to James River in Fluvanna County.

**Raccoon**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Raccoon Ford**; post village in Culpeper County.

**Race**; fork, a small left-hand branch of Knox Creek, rising in Buchanan County.

**Radcliffe**; post village in Mecklenburg County.

**Radford**; small right-hand branch of New River, rising in Pulaski County.

**Radford**; city in Montgomery County, but independent in government, on the Norfolk and Western Railway. Altitude, 1,773 feet. Population, 3,344.

**Radford Furnace**; post village in Pulaski County.

**Radfords**; ford in Roanoke River, Franklin County.

**Radiant**; post village in Madison County.

**Ragged**; marshy island in Back Bay in Princess Anne County.

**Ragged**; mountains in Albemarle County. Elevation, 1,000 to 1,500 feet.

**Ragged**; mountains in Madison County. Elevation, 2,000 to 3,000 feet.

**Ragged**; summit in Brattans Mountain, Rockbridge County.

**Rainbow**; post village in Rockingham County.

**Raines**; post village in Cumberland County on the Farmville and Powhatan Railroad. Altitude, 524 feet.

**Rainey**; pond in the eastern part of Princess Anne County.

**Rainswood**; post village in Northumberland County.

**Ballings**; run, a small left-hand branch of James River in Amherst County.

**Ramble**; post village in Halifax County.

**Ramsey**; gap in Great North Mountains in Rockbridge County.

**Ramsey Draft**; small left-hand tributary to James River in Augusta County.

**Ramsey Mountain**; summit in Augusta County.

**Ranch**; post village in Orange County.

**Randolph**; creek, a small right-hand tributary to James River in Buckingham County.

**Randolph**; post village in Charlotte County on the Southern Railway.

**Rangeley**; village in Henry County.

**Ransons**; post village in Buckingham County.

**Raphine**; post village in Rockbridge County on the Baltimore and Ohio Railroad.

**Rapidan**; post village in Culpeper County.

**Rapidan**; river, a right-hand branch of Rappahannock River, forming the boundary between Greene and Orange counties on one side, and Madison and Culpeper on the other.

**Rappahannock**; county, situated in the northern part of the State in the Piedmont region, the western boundary being the summit of the Blue Ridge. In the eastern part its surface is rolling, becoming broken in the west by short ridges, outlayers of the Blue Ridge and by the heavy spurs of that range. The elevation ranges from 300 up to 3,500 feet in the summits of the Blue Ridge. Area, 264 square miles. Population, 8,843—white, 6,121; negro, 2,722; foreign born, 6; county seat, Washington. The mean magnetic declination in 1900 was 4° 05'. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°.



- Rappahannock**; river, which heads in the Blue Ridge in Fauquier County and flows southeast to Chesapeake Bay. It is navigable to Fredericksburg.
- Rappahannock Academy**; post village in Caroline County.
- Rapps Mill**; post village in Rockbridge County.
- Rasnake**; post village in Russell County.
- Rat Hole**; mountains in Botetourt County.
- Rattle**; creek, a small left-hand tributary to North Fork of Holston River in Washington County.
- Rattlesnake**; branch, a small left-hand tributary to Roanoke River in Campbell County.
- Rattlesnake**; mountains in Rappahannock County. Elevation, 1,500 feet.
- Raven**; post village in Tazewell County on the Norfolk and Western Railway.
- Ravens Nest**; post village in Washington County.
- Rawley Springs**; post village in Rockingham County.
- Ray**; post village in Pittsylvania County.
- Ray**; fork, a small tributary to Dry Fork, rising in Tazewell County.
- Raynor**; post village in Isle of Wight County.
- Reads Wharf**; post village in Northampton County.
- Readus**; village in Shenandoah County.
- Reams**; post village in Dinwiddie County on the Atlantic Coast Line Railroad.
- Reardon**; post village in Charlotte County.
- Reba**; post village in Bedford County.
- Rectortown**; post village in Fauquier County on the Southern Railway.
- Rectory**; post village in Stafford County.
- Redbank**; post village in Halifax County.
- Redbluff**; post village in Wythe County.
- Red Bud**; run, a small left-hand tributary to Shenandoah River in Frederick County.
- Redeye**; post village in Pittsylvania County.
- Redhill**; post village in Albemarle County on the Southern Railway. Altitude, 626 feet.
- Redhouse**; post village in Charlotte County.
- Reding**; post village in Goochland County.
- Rediviva**; post village in Rappahannock County.
- Red Mills**; post village in Rockbridge County.
- Redmonds**; village in Albemarle County.
- Redoak**; post village in Charlotte County.
- Redoak Knob**; small summit in Highland County.
- Red Oak Mountain**; summits in Fauquier County. Elevation, 750 to 1,000 feet.
- Red Rock**; summit in Washington County. Elevation, 4,456 feet.
- Redwood**; post village in Franklin County on the Southern Railway.
- Reed**; creek, a left-hand branch of New River in Wythe County.
- Reed**; creek, a small right-hand tributary to North Fork of Powell River in Lee County.
- Reed**; creek, a right-hand branch of New River rising in Wythe County.
- Reed**; creek, a small right-hand branch of James River in Bedford County.
- Reedcreek**; village in Henry County.
- Reed Island**; post village in Pulaski County on the Norfolk and Western Railway. Altitude, 1,886 feet.
- Reeds**; gap in the Blue Ridge in Nelson County.
- Reedville**; post village in Northumberland County.
- Reedy**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Reedy**; creek, a small left-hand tributary to Roanoke River in Appomattox County.
- Reedy**; creek, a small right-hand branch of James River in Chesterfield County.

**Reedy**; post village in Lunenburg County.

**Reeses**; post village in Charlotte County.

**Regent**; post village in Middlesex County.

**Regulus**; village in Henry County.

**Rehoboth**; post village in Lunenburg County.

**Rehoboth Church**; post village in Lancaster County.

**Rei**; post village in Washington County.

**Reliance**; post village in Warren County.

**Relief**; post village in Frederick County.

**Remington**; town in Fauquier County on the Southern Railway. Population, 198.

**Renan**; post village in Pittsylvania County.

**Renie**; post village in Amherst County.

**Renoville**; post village in Princess Anne County.

**Repton**; post village in Nelson County.

**Republican Grove**; post village in Halifax County.

**Rescue**; post village in Isle of Wight County.

**Residence**; post village in Halifax County.

**Rest**; post village in Frederick County.

**Return**; post village in Caroline County.

**Retz**; post village in Mathews County.

**Reusens**; post village in Campbell County on the Chesapeake and Ohio Railway.

**Reva**; post village in Culpeper County.

**Rex**; post village in Carroll County.

**Rexburg**; post village in Essex County.

**Reynolds**; creek, a small right-hand tributary to James River in Cumberland County.

**Reynolds Store**; post village in Frederick County.

**Rhoadesville**; post village in Orange County.

**Ribbon**; post village in Louisa County.

**Rice**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Rice Depot**; post village in Prince Edward County on the Norfolk and Western Railway.

**Riceville**; post village in Pittsylvania County.

**Rich**; creek, a small right-hand branch of New River in Giles County.

**Rich**; mountains in Tazewell and Bland counties. Elevation, 2,500 to 3,000 feet.

**Rich**; valley in Washington County.

**Richards**; ford of Rappahannock River in Stafford County.

**Richardson**; post village in Carroll County.

**Richardson Mountain**; summit in Amherst County.

**Richardsville**; post village in Culpeper County.

**Rich Hill**; mountains in Giles County.

**Rich Hill**; summits in Rockbridge County.

**Rich Hill**; summit in Botetourt County.

**Richland**; mountains in Rockingham County.

**Richlands**; town in Tazewell County on the Norfolk and Western Railway. Altitude, 1,926 feet. Population, 475.

**Richmond**; county, situated in the eastern part of the State on the Atlantic plain near the coast, and borders on Rappahannock River on the north. The surface is rolling; elevation, about 200 feet above tide. Area, 188 square miles. Population, 7,088—white, 4,159; negro, 2,929; foreign born, 28. County seat, Warsaw. The mean magnetic declination in 1900 was 4° 15'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.



**Richmond**; county seat of Henrico County and capital of the State. It is on the Atlantic Coast Line, the Chesapeake and Ohio, the Richmond, Fredericksburg and Potomac, the Seaboard Air Line, and the Southern railroads. Independent in government. Population, 85,050.

**Rich Mountain**; summit in Carroll County. Elevation, 3,551.

**Rich Patch**; mountains in Alleghany and Botetourt counties. Elevation, 1,500 to 3,500 feet.

**Richpatch**; post village in Alleghany County.

**Rich Valley**; post village in Smyth County.

**Ridge**; run, a small left-hand tributary to York River in Orange County.

**Ridgemont**; post village in Bedford County.

**Ridgeway**; town in Henry County on the Norfolk and Western Railway. Altitude, 819 feet. Population, 332.

**Rifton**; post village in Floyd County.

**Riles**; run, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Rileyville**; post village in Page County on the Norfolk and Western Railway. Altitude, 923 feet.

**Riner**; post village in Montgomery County.

**Ringgold**; post village in Pittsylvania County on the Southern Railway.

**Rinkerton**; post village in Shenandoah County.

**Rio**; post village in Albemarle County on the Southern Railway.

**Riovista**; post village in Henrico County on the Chesapeake and Ohio Railway.

**Ripley Mills**; post village in Craig County.

**Ripplemead**; post village in Giles County on the Norfolk and Western Railway. Altitude, 1,603 feet.

**Ripraps**; post village in Elizabeth City County.

**Ripshin**; creek, a small right-hand branch of New River in Gray County.

**Ritchieville**; post village in Dinwiddie County.

**Rival**; post village in Buckingham County.

**Rivanna**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Rivanna**; river, a small left-hand tributary to James River, formed by two forks, North and South, in Albemarle County.

**Riven**; rocks in Jack Mountain, Highland County.

**Riven Rock**; mountains in Rockingham County. Elevation, 2,500 feet

**Riverdale**; post village in Southampton County.

**River Knobs**; summits in Scott County.

**River Knobs**; summits in Washington County.

**Rivermont**; post village in Franklin County.

**Riverside**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 935 feet.

**Riversidepark**; post village in Fairfax County on the Washington, Alexandria and Mount Vernon Electric Railway.

**Riverton**; post village in Warren County on the Norfolk and Western and the Southern railways.

**Riverville**; post village in Amherst County.

**Rives**; post village in Prince George County.

**Rixeyville**; post village in Culpeper County.

**Roach**; river, a small left-hand tributary to James River in Greene County.

**Roadside**; post village in Rockingham County.

**Roague**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Roanes**; post village in Gloucester County.

**Roanoke**; river of Virginia and North Carolina, heading in the Valley of Virginia and largely in Roanoke County. It flows in a generally southeast course to its mouth in Albemarle Sound in North Carolina. From the mouth of its principal branch, Dan River, to the point near its source, it is commonly known as Staunton River. It is navigable to the fall line at Weldon, N. C. The mean discharge is 506 cubic feet per second; drainage area, 9,237 square miles.

**Roanoke**; county, situated in the western part of the State on the summit of the Blue Ridge, there having the form of a broad plateau with an escarpment facing the east. Its surface is broken with many parallel ridges, turning northeast and southwest, and limestone valleys. It is drained by Roanoke River. The altitude ranges from 900 up to 3,500 feet above sea level. Area, 297 square miles. Population, 15,837—white, 11,991; negro, 3,845; foreign born, 48. County seat, Salem. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Roanoke**; city in Roanoke County, independent in government, on the Norfolk and Western Railway. Population, 21,495. Altitude, 907 feet.

**Roaring**; fork, a small right-hand tributary to Powell River in Wise County.

**Roaring**; fork, a small tributary to North Fork of Holston River in Tazewell County.

**Roaring**; run, a small left-hand branch of James River in Botetourt County.

**Roaring**; run, a small right-hand tributary to James River in Botetourt County.

**Roaring Falls**; mountains in Wythe County.

**Roaring Run**; village in Botetourt County.

**Rob**; post village in Botetourt County.

**Roberta**; post village in Franklin County.

**Roberts**; creek, a small left-hand branch of North Fork of Holston River, rising in Scott County.

**Roberts**; mountains in Nelson County.

**Robertson**; river, a small right-hand tributary to Rappahannock River in Madison County.

**Robertson**; run, a small right-hand tributary to Mattaponi River in Spottsylvania County.

**Robertsons**; post village in Bedford County.

**Robinett**; post village in Scott County.

**Robinson**; gap in Blue Ridge in Rockbridge County.

**Robinson**; river, a small right-hand tributary to Rappahannock River in Madison County.

**Robinsons**; branch, a small left-hand tributary to James River in Rockbridge County.

**Robious**; post village in Chesterfield County on the Southern Railway.

**Rochelle**; post village in Madison County.

**Rock**; creek, a small right-hand tributary to New River in Carroll County.

**Rock**; creek, a small right-hand tributary to James River in Cumberland County.

**Rock**; island in James River in Buckingham County.

**Rockbridge**; county, situated in the western part of the State in the Appalachian Valley, the eastern boundary being the summit of the Blue Ridge. The surface in the eastern part is broken by many short ridges and isolated summits. It is drained by South River and a branch of the James. The altitude ranges from 800 up to 3,500 feet. Area, 593 square miles. Population, 21,799—white, 17,715; negro, 4,084; foreign born, 57. County seat, Lexington. The mean magnetic declination in 1900 was  $1^{\circ} 40'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Chesapeake and Ohio, the Baltimore and Ohio, and the Norfolk and Western railroads.

**Rockbridge Alum Springs**; post village in Rockbridge County on the Rockbridge Alum Springs and Virginia and Western Railroad.

**Rockbridge Baths**; post village in Rockbridge County.

**Rockcastle**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Rockcastle**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Rockdale**; creek, a small right-hand branch of James River in Chesterfield County.

**Rockdell**; post village in Russell County.

**Rock Enon Springs**; post village in Frederick County.

**Rock Fish**; gap in the Blue Ridge in Augusta County on the Southern Railway.

**Rockfish**; river, a left-hand branch of James River in Nelson County.

**Rockfish**; run, a small left-hand branch of James River in Fluvanna County.

**Rockfish Depot**; post village in Nelson County.

**Rockford**; post village in Stafford County.

**Rockhouse**; post village in Russell County.

**Rockingham**; county, situated in the northwestern part of the State in the Appalachian Valley, its eastern boundary being through most of its course the summit of the Blue Ridge. The surface is rolling, with the exception of the slopes of the Blue Ridge and Massanutten Mountain. The altitude ranges from a little less than a few thousand feet up to 3,500 feet in the Blue Ridge summits. Area, 870 square miles. Population, 33,527—white, 30,893; negro, 2,632; foreign born, 100. County seat, Harrisonburg. The mean magnetic declination in 1900 was  $2^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Baltimore and Ohio, the Chesapeake Western, the Southern, and the Norfolk and Western railroads.

**Rockingham**; post village in Rockingham County.

**Rock Island**; post village in Buckingham County.

**Rock Island**; run, a small right-hand branch of James River in Buckingham County.

**Rock Lick**; branch, a small right-hand branch of Levisa Fork in Buchanan County.

**Rock Lick**; creek, a small right-hand branch of Levisa Fork, rising in Buchanan County.

**Rocks**; summit in Nelson County. Elevation, 3,210 feet.

**Rock Spring**; small right-hand branch of New River in Pulaski County.

**Rockville**; post village in Hanover County.

**Rocky**; branch, a small left-hand tributary to James River in Bath County.

**Rocky**; branch, a small right-hand tributary to Chickahominy River in Henrico County.

**Rocky**; ford in Goose Creek in Bedford County.

**Rocky**; fork, a small left-hand tributary to Guest River in Wise County.

**Rocky**; gap between Rich and Wolf Creek mountains, caused by a left-hand branch of Wolf Creek.

**Rocky**; river, a small left-hand tributary to James River in Albemarle County.

**Rocky**; run, a small left-hand branch of James River in Botetourt County.

**Rocky**; run, a small left-hand tributary to Appomattox River in Appomattox County.

**Rocky**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Rockygap**; post village in Bland County.

**Rocky Hollow**; small left-hand branch of Cripple Creek in Wythe County.

**Rocky Mount**; county seat of Franklin County on the Norfolk and Western and the Southern railways. Population, 612. Altitude, 1,132 feet.

**Rocky Mount**; turnpike in Bedford County.

**Rocky Mountain**; summit in Rockbridge County. Elevation, 4,010 feet.

**Rockypoint**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Rocky Ridge**; summit in Black Creek Mountains in Bath County.

**Rocky Row**; mountains in Amherst County. Elevation, 1,500 to 2,000 feet.

**Rocky Row**; run, a small left-hand branch of James River in Amherst County.

**Rockyrun**; post village in Orange County.

**Rodden**; post village in Halifax County.

**Rodes**; post village in Bedford County.

**Rodophil**; post village in Amelia County.

**Rogers**; mountain between Grayson and Smyth counties.

- Rogers**; post village in Montgomery County.
- Rolla**; post village in Augusta County.
- Rolling Hill**; post village in Charlotte County.
- Rollins Fork**; post village in King George County.
- Roma**; post village in Bedford County.
- Roman**; post village in Augusta County.
- Rondabush**; post village in Greene County.
- Rondo**; post village in Pittsylvania County.
- Roop**; village in Montgomery County.
- Rorer Mines**; village in Roanoke County on the Norfolk and Western Railway.
- Rorrer**; post village in Carroll County.
- Rosa**; post village in Halifax County.
- Rose**; run, a small left-hand branch of South Fork of Roanoke River in Montgomery County.
- Rose Bower**; post village in Appomattox County.
- Rosebrook**; post village in Greene County.
- Rosedale**; post village in Russell County.
- Rosehill**; post village in Lee County on the Louisville and Nashville Railroad.
- Roseland**; post village in Nelson County.
- Rose Mills**; post village in Nelson County.
- Rosena**; post village in Albemarle County.
- Rosenbaum**; creek, a small left-hand branch of South Fork of Holston River in Washington County.
- Rosenberger**; post village in Frederick County.
- Roseville**; post village in Stafford County.
- Rosewood**; post village in Pittsylvania County.
- Rosier**; creek, a small right-hand branch of Potomac River in King George County.
- Rosita**; post village in King George County.
- Rosslyn**; post village in Alexandria County on the Philadelphia, Baltimore and Washington and the Washington, Alexandria and Mount Vernon railroads.
- Rough**; creek, a small left-hand tributary to Roanoke River in Charlotte County.
- Rough**; creek, a small branch of Appomattox River in Appomattox County.
- Rough**; mountains in Bath County. Elevation, 1,500 to 2,500 feet.
- Rough**; post village in Bedford County.
- Roughcreek**; post village in Charlotte County.
- Round**; mountain in Bland County. Elevation, 2,500 to 3,500 feet.
- Round Hill**; summit in Augusta County.
- Round Hill**; summit in Frederick County.
- Round Hill**; summit in Roanoke County.
- Round Hill**; summit in Rockingham County. Elevation, 1,500 feet.
- Round Hill**; town in Loudoun County on the Southern Railway. Altitude, 558 feet.
- Round Mountain**; summit in Amherst County. Elevation, 1,000 feet.
- Round Mountain**; summit in Botetourt County.
- Round Top**; summit of the Blue Ridge in Nelson and Amherst counties. Elevation, 3,430 feet.
- Rouss**; post village in Scott County.
- Routts**; post village in Fauquier County.
- Rowanta**; post village in Dinwiddie County.
- Rowanty**; creek, a left-hand branch of Nottoway River in southeast Virginia.
- Roxbury**; post village in Charles City County on the Chesapeake and Ohio Railway.
- Roxie**; post village in Smyth County.
- Roxton**; post village in Lunenburg County.
- Royville**; post village in Loudoun County.
- Buark**; post village in Middlesex County.

**Rubermont**; post village in Lunenburg County.

**Rucker**; run, a small left-hand tributary to James River in Nelson County.

**Ruckers**; creek, a small left-hand tributary to James River in Amherst County.

**Ruckers**; gap in Bath County.

**Ruckersville**; post village in Greene County.

**Ruckles**; gap in Massanutten Mount.

**Ruddle Mountain**; summit on border of Roanoke and Bedford counties.

**Budder**; post village in Sussex County.

**Rudy**; inlet, a narrow passage through the bordering sand bar on the southeast coast.

**Rue**; post village in Accomac County.

**Ruel**; post village in Hanover County.

**Ruffins**; post village in Surry County.

**Rugby**; post village in Grayson County.

**Rumford**; post village in King William County.

**Ruralbower**; post village in Greenesville County.

**Rural Home**; post village in Grayson County.

**Rural Retreat**; post village in Wythe County on the Norfolk and Western Railway.  
Altitude, 2,500 feet.

**Rush**; creek, a small left-hand branch of South Fork of Holston River in Washington County.

**Rush**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Rushville**; post village in Rockingham County.

**Ruskin**; post village in Tazewell County.

**Russell**; county, situated in the southwestern part of the State, mainly in the Appalachian Valley. It is drained by the Clinch River on the north. The county extends to the summit of the Alleghany front. It has an altitude of 3,700 feet, while that of Clinch River at the lowest point is about 1,400 feet above sea level. Area, 563 square miles. Population, 18,031—white, 17,267; negro, 764; foreign born, 8. County seat, Lebanon. The mean magnetic declination in 1900 was  $1^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Russell**; creek, a small right-hand branch of Clinch River, rising in Dickenson County.

**Russell**; post village in Floyd County.

**Russell Prator**; small right-hand branch of Russell Fork, rising in Buchanan County.

**Russell Rock**; summit in Augustia County.

**Russian**; creek, a small left-hand fork of Clinch River, rising in Russell County.

**Rustburg**; county seat of Campbell County on the Norfolk and Western Railway.  
Altitude, 872 feet.

**Ruth**; post village in Madison County.

**Rutherford**; creek, a small left-hand branch of Cripple Creek in Wythe County.

**Rutherglen**; post village in Caroline County on the Richmond, Fredericksburg and Potomac Railroad.

**Ruthville**; post village in Charles City County.

**Rutledges**; creek, a small left-hand tributary to James River in Amherst County.

**Rutman**; branch, a small left-hand tributary to Roanoke River in Botetourt County.

**Rux**; post village in Brunswick County.

**Ryan**; post village in Loudoun County.

**Ryecove**; post village in Scott County.

**Rye Valley**; post village in Smyth County.

**Ryland**; post village in Culpeper County.

**Sabot Island**; post village in Goochland County.

**Saddle**; creek, a small right-hand branch of New River in Grayson County.

**Saddle**; post village in Grayson County.

**Saffolds**; post village in Mecklenburg County.

**Sago**; post village in Pittsylvania County.

**St. Brides**; post village in Norfolk County on the Norfolk and Western Railway.

**St. Clair**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.

**St. Clair Bottom**; village in Smyth County on the Norfolk and Western Railway. Altitude, 2,444 feet.

**St. Davids Church**; post village in Shenandoah County.

**St. Elmo**; post village in Alexandria County on the Washington, Alexandria and Mount Vernon Electric Railway.

**St. Just**; post village in Orange County.

**St. Luke**; post village in Shenandoah County.

**St. Mary**; river, a small left-hand tributary to James River in Augusta County.

**St. Paul**; post village in Wise County on the Norfolk and Western Railway. Altitude, 1,486 feet.

**St. Stephens Church**; post village in King and Queen County.

**Salem**; county seat of Roanoke County on the Norfolk and Western and the Southern railways. Altitude, 1,006 feet. Population, 3,412.

**Salisbury Furnace**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 894 feet.

**Sallee**; creek, a small right-hand tributary to James River in Powhatan County.

**Sallings Mountain**; summits in Rockbridge County.

**Salt**; creek, a small left-hand tributary to James River in Amherst County.

**Salt**; pond in the eastern part of Princess Anne County.

**Saltcreek**; post village in Amherst County.

**Saltpetre Cave**; post village in Botetourt County on the Chesapeake and Ohio Railway. Altitude, 892 feet.

**Salt Pond**; mountains in Giles County. Elevation, 3,000 to 4,000 feet.

**Saltville**; town in Smyth County on the Norfolk and Western Railway. Altitude, 1,739 feet. Population, 1,051.

**Saluda**; county seat of Middlesex County.

**Sambo**; post village in Patrick County.

**Samos**; post village in Middlesex County.

**Sampson**; post village in Augusta County on the Norfolk and Western Railway.

**Sampsons Wharf**; post village in Northumberland County.

**Sanco**; post village in Prince Edward County.

**Sand**; mountains in Wythe County. Elevation, 2,500 feet.

**Sand Bank**; mountains in Botetourt County. Elevation, 2,500 feet.

**Sand Bridge**; locality in Princess Anne County.

**Sandidges**; post village in Amherst County.

**Sandoval**; post village in Culpeper County.

**Sands**; post village in Southampton County.

**Sandstone Ridge**; mountains in Roanoke County.

**Sandy**; point on Belmont Bay in Fairfax County.

**Sandy**; post village in Rappahannock County.

**Sandy**; river, a left-hand branch of Dan River in Pittsylvania County.

**Sandy**; river, a small right-hand tributary to Appomattox River in Prince Edward County.

**Sandy**; run, a small right-hand tributary to Potomac River in Prince William County.

**Sandy Bottom**; post village in Middlesex County.



- Sandyford**; post village in Bedford County.
- Sandyhook**; post village in Goochland County.
- Sandy Level**; post village in Pittsylvania County.
- Sandy Ridge**; mountains extending along the boundary line of Russell, Tazewell, and Buchanan counties.
- Sandy Ridge**; mountains in Wise and Dickenson counties. Elevation, 2,000 to 2,500 feet.
- Sandy River**; post village in Pittsylvania County.
- Sanford**; post village in Accomac County.
- Sang Camp**; fork, a small right-hand tributary to Levisa Fork in Buchanan County.
- Sangerville**; post village in Augusta County.
- Santamo**; post village in Buchanan County.
- Santiago**; post village in Page County.
- Santos**; post village in Floyd County.
- Sanville**; post village in Henry County.
- Sappony**; branch, a small left-hand branch of Appomattox River in Chesterfield County.
- Saratoga**; post village in Scott County.
- Sassafras**; post village in Gloucester County.
- Sassin**; post village in Pulaski County.
- Saumsville**; post village in Shenandoah County.
- Saunders**; post village in Nansemond County on the Suffolk and Carolina Railway.
- Savage Crossing**; post village in Nansemond County.
- Savageville**; post village in Accomac County.
- Savannah**; post village in Alleghany County.
- Savedge**; post village in Surry County on the Southern Railway.
- Saw Mill**; run, a small left-hand tributary to Shenandoah River in Augusta County.
- Saw Mill Ridge**; summit in Augusta County.
- Saxe**; post village in Charlotte County on the Southern Railway.
- Saxis**; post village in Accomac County.
- Sayersville**; post village in Tazewell County.
- Saylers**; creek, a small right-hand branch of Appomattox River in Prince Edward County.
- Scaffold**; run, a small right-hand tributary to Jackson River in Highland County.
- Scheffer**; gap in Little North Mountain in Shenandoah County.
- School**; post village in Henrico County.
- Schoolhouse**; branch, a small right-hand tributary to James River in Botetourt County.
- Schuyler**; post village in Nelson County.
- Scotland**; post village in Surry County on the Surry, Sussex and Southampton Railway.
- Scott**; county, situated in the southwestern part of the State. Its area consists of an alternation of narrow ridges and valleys, trending northeast and southwest. It is drained by the Clinch and the North Fork of Holston River. The altitude ranges from 1,200 to 4,000 feet. Area, 535 square miles. Population, 22,694—white, 22,067; negro, 627; foreign born, 9. County seat, Gate City. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Virginia and Southwestern Railway.
- Scott**; creek, a small left-hand branch of Elizabeth River in Norfolk County.
- Scotts**; ford of Middle River in Rockingham County.
- Scotts**; run, a small right-hand branch of Potomac River in Fairfax County.
- Scottsburg**; post village in Halifax County on the Southern Railway.
- Scotts Crossroads**; post village in Mecklenburg County.
- Scottsford**; village in Rockingham County.
- Scotts Mountain**; summit in Amherst County.



**Scottsville**; town in Albemarle County on the Chesapeake and Ohio Railway.

Altitude, 275 feet. Population, 1,248.

**Scrabble**; post village in Rappahannock County.

**Screamerville**; post village in Spottsylvania County on the Potomac, Fredericksburg and Piedmont Railroad.

**Scruggs**; post village in Franklin County.

**Scurff Mountain**; summit in Botetourt County.

**Sealston**; post village in King George County.

**Seaview**; post village in Northampton County.

**Sebrell**; post village in Southampton County.

**Second**; small left-hand branch of Appomattox River in Chesterfield County.

**Second**; mountain in Rockingham County. Elevation, 2,000 to 2,500 feet.

**Second Swamp**; small right-hand tributary to James River in Prince George County.

**Sedalia**; post village in Bedford County.

**Seddon**; town in Bland County. Population, 243.

**Seibert**; run, a small right-hand tributary to Jackson River in Highland County.

**Selden**; post village in Gloucester County on the Chesapeake and Ohio Railway.

**Self**; village in Henry County.

**Sells**; village in Grayson County.

**Selma**; post village in Alleghany County.

**Selone**; post village in Fauquier County.

**Seneca**; river, a small left-hand branch of Roanoke River in Campbell County.

**Sentinel**; post village in Warren County.

**Seven Fountains**; post village in Shenandoah County.

**Seven Islands**; post village in Fluvanna County.

**Seven Mile**; ford of Middle Fork of Holston River in Smyth County.

**Seven Mile**; mountains in Craig County. Elevation, 2,000 to 2,500 feet.

**Sevenmile Ford**; post village in Smyth County.

**Severn**; post village in Gloucester County.

**Seville**; post village in Madison County.

**Sewall**; point of land, in Princess Anne County, extending into James River.

**Sewells Point**; post village in Norfolk County.

**Sewish**; creek, a small left-hand tributary to Meherrin River in Lunenburg County.

**Sexton**; post village in Surry County.

**Shacklefords**; post village in King and Queen County.

**Shacklet**; post village in Stafford County.

**Shack Mills**; post village in Buchanan County.

**Shadwell**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Shadygrove**; post village in Franklin County.

**Shadyside**; post village in Northampton County.

**Shafer**; creek, a right-hand branch of Powell River in Lee County.

**Shafer**; ford of Powell River in Lee County.

**Shafter**; post village in Albemarle County.

**Shako**; post village in Goochland County.

**Shallow**; ford of Roanoke River in Franklin County.

**Shamrock**; post village in Grayson County.

**Shanghai**; post village in King and Queen County.

**Shanklin**; post village in Bath County.

**Shannon Hill**; post village in Goochland County.

**Shanty Hollow**; small left-hand tributary to James River in Alleghany County.

**Sharps**; branch, a small right-hand tributary to Holston River, rising in Scott County.

**Sharps**; creek, a small right-hand tributary to James River in Buckingham County.

**Sharps**; post village in Richmond County.

**Shaws**; fork, a small left-hand tributary to James River in Highland County.

**Shaws Ridge**; mountains in Highland County, extending into Pendleton County, W. Va. Elevation, 2,500 feet.

**Shaws Store**; post village in Mecklenburg County.

**Shawsville**; post village in Montgomery County on the Norfolk and Western Railway. Altitude, 1,473 feet.

**Shawver Mill**; post village in Tazewell County.

**Sheep**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Sheep**; run, a small left-hand tributary to James River in Rockbridge County.

**Sheetz**; mountain in Botetourt County.

**Sheldries**; creek, a small right-hand branch of James River in Buckingham County.

**Shelfar**; post village in Louisa County.

**Shell**; marshy point, in Princess Anne County, projecting into Back Bay.

**Shell**; post village in Mathews County.

**Shellville**; village in Montgomery County.

**Shelton**; post village in Nelson County.

**Shenandoah**; county, situated in the northwestern part of the State in the Appalachian Valley, there known as the Valley of the Shenandoah, extending from the Massanutten Mountain on the east to North Mountain, the State line, on the west. The surface is in the main undulating, diversified by a few parallel ridges. The altitude ranges from 600 feet up to 3,000 feet. Area, 486 square miles. Population, 20,253—white, 19,604; negro, 649; foreign born, 58. County seat, Woodstock. The mean magnetic declination in 1900 was  $3^{\circ} 50'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Southern and the Baltimore and Ohio railroads.

**Shenandoah**; mountains in Highland and Bath counties. Elevation, 2,000 to 3,500 feet.

**Shenandoah**; river of Virginia and West Virginia; a right-hand branch of the Potomac, which heads in two large branches, North and South forks, in Augusta and Rockingham counties, and flows northeast to its junction with the Potomac at Harpers Ferry. The drainage area is 3,009 square miles.

**Shenandoah**; town in Page County on the Norfolk and Western Railway. Population, 1,220.

**Shenandoah Alum Springs**; post village in Shenandoah County.

**Shendun**; town in Rockingham County. Population, 381.

**Sheppards**; post village in Buckingham County on the Southern Railway.

**Sherando**; post village in Augusta County.

**Sherwill**; village in Campbell County.

**Sherwood**; post village in Rockbridge County on the Chesapeake and Ohio Railway.

**Sheva**; post village in Pittsylvania County.

**Shields**; gap in Nelson County.

**Shiloh**; post village in King George County.

**Shirkey Mill**; branch, a small right-hand tributary to James River in Botetourt County.

**Shirley**; post village in Charles City County.

**Shockes**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Shockeyville**; post village in Frederick County.

**Shockoe**; creek, a small left-hand tributary to James River in Henrico County.

**Shockoe**; post village in Pittsylvania County.

**Shooting Creek**; post village in Franklin County.

**Shores**; post village in Fluvanna County on the Chesapeake and Ohio Railway.

**Short**; mountain in Tazewell County. Elevation, 1,300 to 4,000 feet.

**Short**; mountains in Bath County.

**Short**; mountains in Shenandoah County. Elevation, 1,000 to 2,500 feet.

**Short Hill**; mountains in Loudoun County. Elevation, 1,000 feet.

**Short Hills**; mountains in Rockbridge County. Elevation, 2,000 to 2,565 feet.

**Shorts Creek**; post village in Carroll County.

**Shortsville**; post village in Washington County.

**Shoulder**; run, a small left-hand tributary to Roanoke River in Bedford County.

**Shoulders Hill**; post village in Nansemond County on the Southern Railway.

**Shoult**; creek, a small left-hand branch of North Fork of Holston River in Washington County.

**Showalter**; post village in Floyd County on the Baltimore and Ohio Railroad.

**Shraders**; post village in Tazewell County.

**Shrouds**; creek, a small right-hand branch of New River, rising in Pulaski County.

**Shuff**; post village in Patrick County.

**Shuler**; post village in Page County.

**Shumansville**; post village in Caroline County.

**Siddons**; post village in Mecklenburg County.

**Sideburn**; post village in Fairfax County on the Southern Railway.

**Sideling Hill**; mountains in Bath, Rockbridge, and Augusta counties. Elevation, 2,000 to 2,500 feet.

**Sideway**; post village in Rockbridge County.

**Sidna**; post village in Carroll County.

**Sigma**; post village in Princess Anne County.

**Signpine**; post village in Gloucester County.

**Silcott Springs**; post village in Loudoun County.

**Silentdell**; post village Botetourt County.

**Siler**; post village in Frederick County.

**Silva**; post village in Accomac County.

**Silverton**; post village in Southampton County.

**Simeon**; post village in Albemarle County.

**Simmonds**; gap in Franklin County.

**Simmons**; gap in the Blue Ridge in Rockingham County.

**Simmons ville**; post village in Craig County.

**Simonson**; post village in Richmond County.

**Simpson**; creek, a small left-hand tributary to James River in Alleghany County.

**Simpsons**; post village in Floyd County on the Norfolk and Western Railway. Altitude, 665 feet.

**Sims**; post village in Goochland County.

**Sinai**; post village in Halifax County.

**Singer**; post village in Roanoke County on the Norfolk and Western Railway.

**Singerglen**; town in Rockingham County. Population, 108.

**Singville**; post village in Amelia County.

**Sinking**; creek, a small creek in Scott and Russell counties.

**Sinking**; creek, a right-hand branch of New River in Craig and Giles counties.

**Sinking**; creek, a small left-hand tributary to James River in Bath and Botetourt counties.

**Sinking Creek**; post village in Craig County.

**Sinnickson**; post village in Accomac County.

**Sister Knob**; summit in Bath County.

**Sitlington**; post village in Bath County.

**Skeetrock**; post village in Dickenson County.

**Skidmore**; fork, a small left-hand tributary to Shenandoah River in Augusta County.

**Skidmore**; run, a small left-hand tributary to Shenandoah River in Rockingham County.

**Skinker**; neck of land in Caroline County bounded by Rappahannock River.

**Skin nels**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Skin quarter**; creek, a small left-hand branch of Appomattox River on the border line between Powhatan and Chesterfield counties.

**Skinquarter**; post village in Chesterfield County on the Farmville and Powhatan Railroad.

**Skippers**; post village in Greenesville County.

**Skipwith**; post village in Mecklenburg County on the Southern Railway.

**Sky**; village in Rockingham County.

**Skyland**; post village in Page County.

**Skyron**; post village in King William County.

**Slate**; creek, a right-hand branch of Levisa Fork, rising in Buchanan County.

**Slate**; post village in Floyd County.

**Slate**; river, a small right-hand branch of James River in Buckingham County.

**Slate**; run, a small right-hand tributary to Potomac River in Prince William County.

**Slate**; springs in Rockingham County.

**Slate Mills**; post village in Rappahannock County.

**Slate River Mills**; post village in Buckingham County.

**Slatesville**; village in Pittsylvania County.

**Slaughter**; post village in Nelson County.

**Sleepy**; creek, a small right-hand tributary to Potomac River, formed by two forks, North and South, in Frederick County.

**Slemp**; creek, a small right-hand branch of South Fork of Holston River in Smyth County.

**Slemp**; post village in Lee County.

**Slings**; gap in the Blue Ridge in Franklin County.

**Slings**; gap in the Blue Ridge in Roanoke County.

**Slusser**; post village in Montgomery County.

**Smacks**; creek, a small right-hand branch of Appomattox River in Amelia County.

**Smart**; post village in Floyd County.

**Smilax**; post village in Mecklenburg County.

**Smith**; creek, a small left-hand tributary to James River in Alleghany and Augusta counties.

**Smith**; creek, a small left-hand tributary to North Fork of Holston River, rising in Washington County.

**Smith**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Smith**; ford of Blackwater River in Franklin County.

**Smith**; mountains in Pittsylvania County. Elevation, 1,500 to 2,043 feet.

**Smith**; post village in Floyd County on the Chesapeake and Ohio Railway.

**Smith**; river, a large left-hand branch of Dan River in Patrick and Henry counties.

**Smithcreek**; post village in Washington County.

**Smithfield**; town in Isle of Wight County. Population, 1,225.

**Smithland**; post village in Albemarle County.

**Smith Ridge**; mountains in Roanoke County. Elevation, 1,500 feet.

**Smith Ridge**; summit in Roanoke County.

**Smiths Crossroads**; post village in Mecklenburg County.

**Smithville**; town in Charlotte County. Population, 96. Altitude, 1,150 feet.

**Smoky Ordinary**; post village in Brunswick County.

**Smoots**; post village in Caroline County.

**Smyrna**; post village in Bedford County.

**Smyth**; county, situated in the southwestern part of the State in the Appalachian Valley, and includes much of the headwaters of Holston River. Its surface is an alternation of narrow ridges and limestone valleys. The altitude ranges from 1,700 up to 4,000 feet. Area, 444 square miles. Population, 17,121—white, 15,950; negro, 1,170; foreign born, 60. County seat, Marion. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50 to 55°. The county is traversed by the Norfolk and Western Railway.

**Smythers**; post village in Carroll County.

**Snail Creek**; river, a small tributary to Nottoway River in Lunenburg County.

**Snake**; creek, a small right-hand tributary to New River in Carroll County.

**Snake**; run, a small right-hand tributary to Jackson River in Alleghany County.

**Snakecreek**; post village in Carroll County.

**Snake Hollow**; summit in Rockingham County.

**Snake Run Ridge**; mountains in Alleghany County. Elevation, 3,000 feet.

**Snapp**; post village in Tazewell County.

**Snead**; post village in Franklin County.

**Sneads Spring**; small left-hand tributary to Nottoway River in Nottoway County.

**Snell**; post village in Spottsylvania County.

**Snelson**; post village in Hanover County.

**Snickers**; gap in the Blue Ridge, Loudoun County.

**Snidows**; ferry over New River in Giles County.

**Snow**; creek, a small right-hand branch of James River in Bedford County.

**Snowcreek**; post village in Franklin County.

**Snowden**; post village in Amherst County.

**Snowflake**; post village in Scott County.

**Snowville**; post village in Pulaski County.

**Snyder**; post village in Augusta County.

**Soapstone**; post village in Pittsylvania County.

**Soap Stone**; quarry in Albemarle County.

**Soles**; post village in Mathews County.

**Solomons**; creek, a small right-hand branch of James River in Powhatan County.

**Solomons**; village in Henrico County.

**Somerset**; post village in Orange County on the Southern Railway.

**Somerton**; post village in Nansemond County.

**Somerville**; post village in Fauquier County.

**Sontag**; post village in Franklin County.

**Soudan**; post village in Mecklenburg County on the Southern Railway.

**Sounding Knob**; summit in Jack Mountains in Highland County.

**South**; small right-hand branch of Potomac River in Highland County.

**South**; mountains in Rockbridge County. Elevation, 1,500 to 2,500 feet.

**South**; river, a left-hand tributary to James River in Rockbridge County.

**South**; river, a right-hand branch of Shenandoah River in Augusta County. The mean discharge at Port Republic is 331½ cubic feet per second.

**South**; river, a small right-hand branch of Mattaponi River in Caroline County..

**South**; run, a small right-hand tributary to Potomac River in Prince William and Fauquier counties.

**South**; run, a small right-hand branch of Potomac River in Fairfax County.

**Southampton**; county, situated in the southern part of the State on the Atlantic plain, bordering the North Carolina line. Its surface is level and but 100 or 200 feet above tide. Area, 609 square miles. Population, 22,848—white, 9,165; negro, 13,683; foreign born, 22. County seat, Courtland. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Southern and the Seaboard and Roanoke railways.

**South Anna**; river, a right-hand tributary to York River in Louisa County.

**South Boston**; town in Halifax County on the Norfolk and Western and the Southern railways. Population, 1,851.

**South Hill**; post village in Mecklenburg County on the Southern Railway.

**South Norfolk**; post village in Norfolk County.

**South Quay**; post village in Nansemond County.

**South Western**; mountains in Albemarle County. Elevation, 500 to 1,500 feet.

**Sowego**; post village in Fauquier County.

**Sowers**; post village in Floyd County.

**Space**; post village in Bedford County.

**Spainville**; post village in Nottoway County.

**Spanish Oaks**; village in Appomattox County.

**Sparkling Springs**; post village in Rockingham County.

**Sparta**; post village in Caroline County.

**Spear**; mountains in Buckingham County. Elevation, 1,000 to 1,500 feet.

**Spear Mount**; summit in Spear Mountain. Elevation, 1,500 feet.

**Speedwell**; post village in Wythe County.

**Speer**; ferry over Clinch River, at Speer Ferry town, in Scott County.

**Speers Ferry**; post village in Scott County.

**Spencer**; post village in Henry County on the Danville and Western Railway.  
Altitude, 855 feet.

**Sperryville**; post village in Rappahannock County.

**Spitler**; post village in Augusta County on the Norfolk and Western Railroad.

**Sponge**; post village in Scott County.

**Sport**; post village in Augusta County.

**Spotcash**; post village in Brunswick County.

**Spottsville**; post village in Surry County.

**Spottswood**; post village in Augusta County on the Baltimore and Ohio Railroad.

**Spottsylvania**; county situated in the central part of the State, mainly in the Piedmont region. It has a rolling surface. The elevation is only 200 or 300 feet above sea level. Area, 401 square miles. Population, 9,239—white, 5,353; negro, 3,886; foreign born, 65. County seat, Spottsylvania. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Richmond, Fredericksburg and Potomac and the Southern railroads.

**Spottsylvania**; county seat of Spottsylvania County.

**Spout**; run, a small left-hand branch of Shenandoah River in Clarke County.

**Spout**; run, a small right-hand branch of Potomac River in Alexandria County.

**Spoutsprings**; post village in Appomattox County on the Norfolk and Western Railway. Altitude, 827 feet.

**Spratts**; post village in Smyth County.

**Spring**; branch, a small left-hand tributary to James River in Bath County.

**Spring**; creek, a small left-hand tributary to James River in Alleghany County.

**Spring**; creek, a small left-hand branch of Meherrin River in Lunenburg County.

**Spring**; creek, a small right-hand tributary to Appomattox River in Prince Edward County.

**Spring**; creek, a small right-hand branch of South Fork of Holston River, rising in Washington County.

**Springcreek**; post village in Rockingham County on the Chesapeake Western Railway.

**Spring Garden**; post village in Pittsylvania County.

**Springgrove**; post village in Surry County.

**Springman**; post village in Fairfax County.

**Spring Mills**; post village in Appomattox County.

**Springvale**; post village in Fairfax County.

**Springvalley**; post village in Grayson County.

**Springville**; post village in Tazewell County.

**Springwood**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Sprouts**; run, a small right-hand branch of James River in Botetourt County.

**Spruce**; run, a small right-hand branch of New River in Giles County.



- Spruce Pine**; branch, a small right-hand tributary to Levisa Fork in Buchanan County.
- Spruce Run**; mountains in Giles County. Elevation, 2,000 to 3,000 feet.
- Spur**; branch, a small right-hand tributary to Walker Creek in Wythe County.
- Spurgeon**; post village in Louisa County.
- Spy**; run, a small left-hand tributary to James River in Augusta County.
- Spy Rock**; summit in Nelson County. Altitude, 3,797 feet.
- Squire**; small left-hand branch of Slate Creek in Buchanan County.
- Stafford**; county, situated in the eastern part of the State in the Piedmont region. It has an undulating surface, rising in the western edge and summit of the Blue Ridge, which forms the boundary. Most of the area of the county lies between 200 and 500 feet in altitude, and covers 285 square miles. Population, 8,097—white, 6,489; negro, 1,608; foreign born, 33. County seat, Stafford. The mean magnetic declination in 1900 was  $3^{\circ} 50'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Richmond, Fredericksburg and Potomac Railroad.
- Stafford**; county seat of Stafford County.
- Stafford Store**; post village in Stafford County.
- Staffordsville**; post village in Giles County.
- Stage Junction**; post village in Fluvanna County.
- Staley**; creek, a small left-hand branch of Middle Fork of Holston River in Smyth County.
- Stanardsville**; county seat of Greene County.
- Standifords**; creek, a small right-hand tributary to Roanoke River in Franklin County.
- Stanley**; post village in Henry County on the Norfolk and Western Railway.
- Stanleyton**; post village in Page County. Altitude, 1,064 feet.
- Stanopher**; village in Franklin County.
- Stanton**; creek, a small right-hand tributary to New River in Carroll County.
- Stapleton Mills**; post village in Amherst County on the Chesapeake and Ohio Railway.
- Star**; post village in Carroll County.
- Starkey**; post village in Patrick County on the Norfolk and Western Railway. Altitude, 1,124 feet.
- Star Tannery**; post village in Frederick County.
- State Line**; small right-hand branch of Levisa Fork, rising in Buchanan County.
- Staunton**; city, situated in Augusta County, but independent in government, although it contains the court-house, on the Chesapeake and Ohio and the Baltimore and Ohio railroads. Altitude 1,366 feet. Population, 7,289.
- Staunton**; creek, a small right-hand branch of Clinch River.
- Staunton**; river. See Roanoke River.
- Stearnes**; post village in Fluvanna County.
- Stebbins**; post village in Halifax County.
- Steeleburg**; post village in Tazewell County.
- Steeles Tavern**; post village in Augusta County.
- Steffler**; run, a small left-hand branch of Middle Fork of Holston River in Smyth County.
- Stella**; post village in Patrick County on the Danville and Western Railway.
- Stephens**; run, a small left-hand tributary to Shenandoah River in Frederick and Warren counties.
- Stephens City**; town in Frederick County on the Baltimore and Ohio Railroad. Population, 490.
- Stephenson**; post village in Frederick County on the Baltimore and Ohio Railroad. Altitude, 499 feet.
- Sterling**; post village in Loudoun County on the Southern Railway.



**Sterling Knob**; summit in Nelson County.

**Stevensburg**; post village in Culpeper County.

**Stevensville**; post village in King and Queen County.

**Stewarts**; creek, a small left-hand tributary to Yadkin River in Patrick County.

**Stewarts Knob**; summit in Roanoke County. Elevation, 2,472 feet.

**Stewartsville**; post village in Bedford County.

**Stickleyville**; post village in Lee County. Altitude, 1,589 feet.

**Stile**; post village in Scott County.

**Stillhouse**; small right-hand branch of North Fork of Holston River in Smyth County.

**Stillhouse**; small left-hand branch of New River in Grayson County.

**Still House**; branch, a small left-hand tributary to James River in Alleghany County.

**Still House**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Stinson**; post village in Russell County.

**Stith**; post village in Halifax County.

**Stock**; creek, a small right-hand branch of Appomattox River in Amelia County.

**Stock**; creek, a small right-hand branch of Clinch River in Scott County.

**Stocker Knob**; summit in Lee County. Elevation, 2,500 feet.

**Stockton**; fork, a small left-hand tributary to James River in Albemarle County.

**Stocton**; post village in Henry County.

**Stoddert**; post village in Cumberland County.

**Stokes**; post village in Goochland County on the Chesapeake and Ohio Railway.

**Stokesland**; post village in Pittsylvania County on the Danville and Western and the Southern railways.

**Stone**; creek, a small right-hand tributary to North Fork of Powell River.

**Stone**; mountains of Lee, Wise, Russell, and Scott counties.

**Stonebridge**; post village in Clarke County.

**Stone Coal**; small right-hand branch of Powell River in Wise County.

**Stone Coal**; creek, a small right-hand tributary to James River in Botetourt County.

**Stonega**; post village in Wise County on the Interstate Railroad.

**Stonehouse**; creek, a small left-hand tributary to James River in Amherst County.

**Stoneleigh**; post village in Fairfax County.

**Stone Mountain**; creek, a small right-hand tributary to New River in Carroll County.

**Stone Mountain**; post village in Carroll County.

**Stone Mountain**; summit in Bedford County. Elevation, 1,144 feet.

**Stonewall**; creek, a small right-hand branch of James River in Appomattox County.

**Stonewall**; post village in Augusta County.

**Stoney**; creek in Dinwiddie County.

**Stoney**; run, a small right-hand tributary to Shenandoah River in Page County.

**Stony**; creek, a left-hand branch of Nottoway River in southeast Virginia.

**Stony**; creek, a small left-hand tributary to South Fork of Roanoke River in Montgomery County.

**Stony**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Stony**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Stony**; creek, a small right-hand branch of Clinch River in Scott County.

**Stony**; creek, a small right-hand branch of New River in Giles County.

**Stony**; run, a small left-hand branch of Chickahominy River in Hanover County.

**Stony**; run, a small left-hand branch of Shenandoah River in Rockingham County.

**Stony**; run, a small left-hand tributary to Shenandoah River in Augusta County.

**Stony**; run, a small right-hand tributary to Shenandoah River in Augusta County.

- Stony**; run, a small right-hand tributary to Shenandoah River in Page County.
- Stony Battle**; creek, a small right-hand tributary to James River in Botetourt County.
- Stonycreek**; post village in Sussex County on the Atlantic Coast Line Railroad.
- Stonycross**; post village in Mecklenburg County.
- Stony Man**; post village in Page County.
- Stony Man**; summit of the Blue Ridge in Madison County. Elevation, 4,031 feet.
- Stonypoint**; post village in Albemarle County.
- Stonypoint Mills**; post village in Cumberland County.
- Stop**; post village in Carroll County.
- Stormont**; post village in Middlesex County.
- Stout**; small right-hand branch of New River in Grayson County.
- Stovall**; post village in Halifax County.
- Stovalls**; creek, a small left-hand branch of James River in Amherst County.
- Stover**; post village in Augusta River.
- Stowersville**; post village in Bland County.
- Straight**; creek, a small left-hand branch of Stone Creek in Lee County.
- Straight**; creek, a small right-hand tributary to Clinch River in Scott County.
- Straight**; creek, a small right-hand tributary to Potomac River in Highland County.
- Straight**; fork, a small branch of North Fork of Potomac River in Highland County.
- Straightstone**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.
- Straightstone**; post village in Pittsylvania County.
- Stralia**; post village in Alleghany County.
- Strasburg**; town in Shenandoah County on the Southern Railway. Altitude, 637 feet. Population, 690.
- Stratford**; post village in Westmoreland County.
- Stratton**; post village in Dickenson County.
- Streets**; post village in Middlesex County.
- Strole**; post village in Page County.
- Strom**; post village in Botetourt County.
- Stroubles**; creek, a small right-hand branch of New River in Montgomery and Pulaski counties.
- Stuart**; run, a small left-hand tributary to James River in Highland and Bath counties.
- Stuart**; county seat of Patrick County on the Danville and Western Railway. Altitude, 1,188 feet. Population, 371.
- Stuart Mountain**; summit in Lick Mountain in Wythe County.
- Stuarts Draft**; post village in Augusta County on the Norfolk and Western Railway. Altitude, 1,385 feet.
- Stubbs**; post village in Spottsylvania County.
- Studley**; post village in Hanover County.
- Stuffle**; run, a small branch of Reed Creek, rising in Wythe County.
- Stull**; run, a small right-hand tributary to Shenandoah River in Augusta County.
- Stump**; post village in Washington County.
- Sturgeon**; creek, a small left-hand branch of North Fork of Holston River in Washington County.
- Sturgeon Point**; post village in Charles City County.
- Sturgeonville**; post village in Brunswick County.
- Suanees**; creek, a small branch of Appomattox River in Appomattox County.
- Subletts**; post village in Powhatan County.
- Success**; post village in Warren County on the Norfolk and Western Railway.
- Suck**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Suck**; mountains in Bedford County. Elevation, 1,500 to 2,160 feet.

**Sudley Springs**; post village in Prince William County.

**Suffolk**; county seat of Nansemond County on the Atlantic Coast Line, the Norfolk and Western, the Seaboard Air Line, the Suffolk and Caroline, and the Southern railroads. Population, 3,827.

**Sugar**; creek, a small right-hand tributary to James River in Rockbridge County.

**Sugar**; run, a small left-hand branch of Walker Creek, in Giles County.

**Sugar**; run, a small right-hand branch of Cripple Creek in Wythe County.

**Sugar**; run, a small right-hand tributary to New River in Pulaski County.

**Sugar**; run, a small right-hand tributary to Powell River in Lee County.

**Sugar**; run, a small right-hand tributary to Roanoke River in Floyd County.

**Sugargrove**; post village in Smyth County.

**Sugarland**; run, a small right-hand branch of Potomac River in Loudoun County.

**Sugar Loaf**; summit in Augusta County. Elevation, 2,000 feet.

**Sugar Loaf**; summit in Botetourt County. Altitude, 2,393 feet.

**Sugar Loaf**; summit in Nelson County.

**Sugar Loaf**; summit in Roanoke County. Elevation, 2,000 feet.

**Sugar Ridge**; small left-hand branch of New River in Carroll County.

**Sugar Run**; mountains in Giles County. Elevation, 1,000 to 3,910 feet.

**Sulphur Mines**; post village in Louisa County.

**Sulphur Ridge**; spur from Prices Mountain in Botetourt County.

**Summerdean**; village in Augusta County.

**Summerduck**; post village in Fauquier County.

**Summerduck**; run, a small right-hand tributary to Rappahannock River in Culpeper County.

**Summerfield**; post village in Grayson County.

**Summers**; post village in Rockbridge County.

**Summit**; post village in Spottsylvania County on the Richmond, Fredericksburg and Potomac Railroad.

**Sunbeam**; post village in Southampton County.

**Sunlight**; post village in Spottsylvania County.

**Sunnybank**; post village in Northumberland County.

**Sunnyside**; post village in Cumberland County on the Farmville and Powhatan Railroad.

**Sunrise**; post village in Bath County.

**Supin Lick**; mountains in Shenandoah and Rockbridge counties. Elevation, 1,500 to 2,000 feet.

**Supply**; post village in Essex County.

**Surber**; post village in Botetourt County on the Chesapeake and Ohio Railway.

**Surry**; county, situated in the southeastern part of the State on the Atlantic plain. It lies on the south side of James River, at the mouth of Appomattox River. The surface is but little elevated above tide. Area, 292 square miles. Population, 8,469—white, 3,286; negro, 5,183; foreign born, 72. County seat, Surry. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Surry, Sussex and Southampton, and the Southern railways.

**Surry**; county seat of Surry County on the Surry, Sussex and Southampton Railway.

**Susan**; post village in Mathews County.

**Susong**; small right-hand branch of Beaver Creek, rising in Washington County.

**Sussex**; county, situated in the southern part of the State on the Atlantic plain. It has a level surface but little elevated above tide. Area, 490 square miles. Population, 12,082—white, 4,121; negro, 7,961; foreign born, 84. County seat, Sussex. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Southern, the Atlantic Coast Line, the Norfolk and Western, and the Surry, Sussex and Southampton railroads.

**Sussex**; county seat of Sussex County.

**Sutherland**; post village in Dinwiddie County.

**Sutherlin**; post village in Pittsylvania County on the Southern Railway.

**Sutton**; post village in Buckingham County.

**Swamp**; post village in Fauquier County.

**Swans**; post village in Amherst County.

**Swansboro**; post village in Chesterfield County.

**Swansonville**; post village in Pittsylvania County.

**Sweathouse**; creek, a small right-hand tributary to Appomattox River in Amelia County.

**Sweet Chalybeate**; post village in Alleghany County.

**Sweet Chalybeate**; spring in Alleghany County.

**Sweet Hall**; post village in King William County on the Southern Railway.

**Sweet Spring**; creek, a small right-hand tributary to Jackson River in Alleghany County.

**Sweet Spring**; run, a small left-hand branch of South Fork of Roanoke River in Montgomery County.

**Sweet Springs**; mountains in Alleghany County. Elevation, 2,000 to 3,500 feet.

**Swepson**; post village in Mecklenburg County.

**Swetnam**; post village in Fairfax County.

**Swift**; creek, a small left-hand branch of Appomattox River in Chesterfield County.

**Swift**; creek, a small right-hand tributary to James River in Chesterfield County.

**Swift**; run, a small left-hand tributary to James River in Greene County.

**Swift**; run, a small right-hand tributary to Shenandoah River in Rockingham County.

**Swiftrun**; post village in Rockingham County.

**Swoope**; post village in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,650 feet.

**Sword**; creek, a small right-hand tributary to Clinch River in Russell County.

**Swordscreek**; post village in Russell County on the Norfolk and Western Railway. Altitude, 1,861 feet.

**Swover**; creek, a small left-hand tributary to Shenandoah River in Shenandoah County.

**Sycamore**; creek, a small right-hand tributary to Roanoke River in Pittsylvania County.

**Sycamore Station**; post village in Pittsylvania County.

**Sycoline**; creek, a small right-hand tributary to Potomac River in Loudoun County.

**Sycoline**; post village in Loudoun County.

**Sydney**; post village in Montgomery County.

**Sydnorsville**; post village in Franklin County.

**Sylvatus**; post village in Carroll County.

**Symms**; gap in Peters Mountain in Giles County.

**Syria**; post village in Madison County.

**Ta**; river, a small right-hand branch of Mattaponi River in Spottsylvania County.

**Tabb**; post village in York County.

**Tabor**; post village in Washington County.

**Tabscott**; post village in Goochland County.

**Taccio**; village in Franklin County.

**Tackett Mills**; post village in Stafford County.

**Tacoma**; town in Wise County on the Norfolk and Western Railway. Altitude, 1,990 feet. Population, 247.

**Taggart**; post village in Buckingham County.

**Talley**; creek, a small right-hand tributary to York River.

**Talleysville**; post village in New Kent County.

**Tally**; post village in Cumberland County.

**Talmash**; post village in Giles County.

**Talpa**; post village in Prince George County.

**Tamarack Ridge**; mountains in Highland County

**Tamesa**; post village in Franklin County.

**Tampico**; post village in York County.

**Tamworth**; post village in Cumberland County.

**Tangier**; post village in Accomac County.

**Tanner**; branch, a small right-hand tributary to Appomattox River in Amelia County.

**Tanner**; creek, a tidal stream or estuary flowing into Hampton Roads in Princess Anne County.

**Tanner**; point of land extending into Tanner Creek where it empties into James River.

**Tannerscreek**; post village in Norfolk County.

**Tannersville**; post village in Tazewell County.

**Tanny**; post village in Mecklenburg County.

**Tanyard**; branch, a small left-hand tributary to Roanoke River in Charlotte County.

**Tan Yard**; village in Henry County.

**Tappahannock**; county seat of Essex County. Population, 554.

**Taranto**; post village in Augusta County.

**Tardy**; branch, a small left-hand tributary to Roanoke River in Campbell County.

**Tarlac**; post village in Floyd County.

**Taro**; post village in Charlotte County.

**Tarpon**; post village in Dickenson County.

**Tarrys Mill**; post village in Mecklenburg County.

**Tasley**; post village in Accomac County on the New York, Philadelphia and Norfolk Railroad.

**Tasso**; post village in Wise County.

**Tate**; post village in Montgomery County on the Virginia and Southwestern Railway.

**Tattle**; small left-hand branch of Middle Fork of Holston River in Smyth County.

**Tatum**; post village in Orange County.

**Taylor**; creek, a small left-hand tributary to James River in Nelson County.

**Taylors**; creek, a small right-hand tributary to York River in Louisa and Hanover counties.

**Taylors**; mountains in Bedford County. Elevation, 1,500 to 2,555 feet.

**Taylorsburg**; village in Henry County,

**Taylors Store**; post village in Franklin County.

**Taylorstown**; post village in Loudoun County.

**Taylorsville**; post village in Hanover County on the Richmond, Fredericksburg and Potomac Railroad.

**Tazewell**; county, situated in the western part of the State in the Appalachian Valley. Its surface consists of an alternation of narrow ridges and valleys, drained in the main by Clinch River. On the north it extends into the Alleghany plateau, including a portion of the upper waters of the Tug Fork of Big Sandy. Area, 557 square miles. Population, 23,384—white, 19,802; negro, 3,582; foreign born, 410. County seat, Tazewell. The mean magnetic declination in 1900 was  $1^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Tazewell**; county seat of Tazewell County on the Norfolk and Western Railway. Altitude, 2,372 feet. Population, 1,096.

**Tea**; mountains in Shenandoah County. Elevation, 2,000 feet.

**Tear Wallet**; creek, a small left-hand branch of Appomattox River in Cumberland County.

**Teck**; post village in King William County.

**Tell**; post village in Pittsylvania County.

**Temperanceville**; post village in Accomac County.

**Tempest**; post village in Lunenburg County.

**Templeman Crossroads**; post village in Westmoreland County.

**Templeton**; branch, a small left-hand tributary to Clinch River in Scott County.

**Templeton**; post village in Prince George County on the Chesapeake and Ohio Railway.

**Tenth Legion**; village in Rockingham County.

**Terrapin**; creek, a small left-hand tributary to Roanoke River in Bedford County.

**Terrapin**; mountain in the Blue Ridge, Bedford County.

**Terryl**; post village in Halifax County.

**Terrys Fork**; post village in Floyd County.

**Terryville**; post village in Charlotte County.

**Tettington**; post village in Charles City County.

**Thalia**; post village in Princess Anne County on the Norfolk and Southern Railroad.

**Thaxton**; post village in Bedford County on the Norfolk and Western Railway.  
Altitude, 950 feet.

**The Falls**; post village in Nottoway County.

**The Hollow**; post village in Patrick County.

**Thelma**; post village in Louisa County.

**Theological Seminary**; post village in Fairfax County.

**The Plains**; post village in Fauquier County.

**Thessalia**; post village in Giles County.

**Theta**; post village in Campbell County.

**Third**; branch, a small left-hand tributary to Appomattox River in Chesterfield County.

**Thomasburg**; post village in Brunswick County.

**Thompson**; creek, a small left-hand tributary to James River in Amherst County.

**Thompson**; creek, a small right-hand branch of Clinch River in Russell County.

**Thompson**; valley in Tazewell County.

**Thompsons Crossroads**; post village in Louisa County.

**Thompson Springs**; creek, a small left-hand tributary to James River in Bath County.

**Thompson Valley**; post village in Tazewell County.

**Thorn**; creek, a small right-hand branch of Cripple Creek in Wythe County.

**Thornburg**; post village in Spottsylvania County.

**Thorne**; ferry in New River, Wythe County.

**Thornhill**; post village in Orange County.

**Thornton**; gap in the Blue Ridge in Rappahannock County. Elevation, 2,279 feet.

**Thornton**; river, a small right-hand tributary to Rappahannock River in Rappahannock County.

**Thorny**; branch, a small right-hand tributary to Jackson River in Alleghany County.

**Thorofare**; gap between Pond and Bull Run mountains.

**Thoroughfare**; gap in Nelson County.

**Thoroughfare**; mountains in Madison County. Elevation, 1,000 feet.

**Thoroughfare**; post village in Prince William County on the Southern Railway.

**Three**; creek, a right-hand branch of Nottoway River in southeastern Virginia.

**Three Mile**; mountains in Shenandoah County. Elevation, 1,500 feet.

**Three Ridges**; summits in Nelson County.

**Three Square**; post village in Goochland County.

**Three Top**; mountains in Shenandoah County. Elevation, 1,000 to 1,500 feet.

**Throck**; post village in Prince Edward County.



- Thumb**; run, a small left-hand branch of Rappahannock River in Fauquier County.
- Thunder Hill**; summit in Botetourt County.
- Thurman**; post village in Bedford County.
- Tibitha**; post village in Northumberland County.
- Tice**; post village in Carroll County.
- Tidwells**; post village in Westmoreland County.
- Tilda**; post village in Lee County.
- Tilson**; gap in Walker Mountain in Wythe County.
- Tilson Mill**; post village in Bland County.
- Tim**; post village in Patrick County.
- Timber**; creek, a left-hand branch of Roanoke River in Botetourt and Roanoke counties.
- Timberridge**; post village in Rockbridge County on the Baltimore and Ohio Railroad.
- Timber Ridge**; mountains in Augusta County. Elevation, 2,500 to 3,000 feet.
- Timber Ridge**; mountains in Botetourt County. Elevation, 1,500 feet.
- Timber Ridge**; mountains in Frederick County, Va., and Morgan County, W. Va.
- Timbertree**; creek, a small right-hand tributary to Holston River, rising in Scott County.
- Timberville**; town in Rockingham County on the Southern Railway. Altitude, 1,018 feet. Population, 173.
- Timbo**; post village in Bedford County.
- Timothy**; post village in Craig County.
- Timsberry**; creek, a small right-hand tributary to James River in Chesterfield County.
- Tindall**; post village in Floyd County.
- Tinker**; mountains in Botetourt County. Elevation, 1,500 to 3,029 feet.
- Tinkerknob**; post village in Botetourt County.
- Tinkling**; post village in Lunenburg County.
- Tin Pot**; run, a small left-hand branch of Rappahannock River in Fauquier County.
- Tipton**; post village in Carroll County on the Norfolk and Western Railway.
- Tiptop**; post village in Tazewell County on the Norfolk and Western Railway. Altitude, 2,754 feet.
- Titus**; post village in Appomattox County.
- Toad**; run, a small left-hand tributary to James River in Rockbridge County.
- Toad**; run, a small right-hand tributary to James River in Rockbridge County.
- Toano**; post village in James City County on the Chesapeake and Ohio Railway.
- Tobacco**; creek, a small right-hand branch of Rappahannock River in Caroline County.
- Tobacco**; post village in Brunswick County.
- Tobacco Row**; mountains in Amherst County. Elevation 1,000 to 3,000 feet.
- Tobacco Row**; summit in Tobacco Row Mountains; a station in triangulation of the United States Coast and Geodetic Survey. Elevation, 2,938 feet.
- Tobacconville**; post village in Powhatan County on the Farmville and Powhatan Railroad.
- Tobax**; post village in Patrick County.
- Toga**; post village in Buckingham County.
- Toka**; village in Halifax County.
- Tola**; post village in Charlotte County.
- Tolers**; ferry over Roanoke River in Pittsylvania County.
- Toluca**; post village in Stafford County.
- Tomahawk**; creek, a small left-hand tributary to Appomattox River in Chesterfield County.
- Tomahawk**; creek, a small right-hand tributary to James River in Campbell County.
- Tomahawk**; mountain in Rockingham County.



- Tomahawk**; village in Pittsylvania County.
- Tombs**; post village in Lancaster County.
- Toms**; creek, a small right-hand branch of New River in Pulaski, Montgomery, and Franklin counties.
- Tomsbrook**; post village in Shenandoah County on the Southern Railway. Altitude, 745 feet.
- Toms Brook**; small left-hand tributary to Shenandoah River in Shenandoah County.
- Tongue Quarter**; creek, a small right-hand tributary to James River in Buckingham County.
- Tool**; creek, a small left-hand branch of North Fork of Holston River in Washington County.
- Tooters**; creek, a small left-hand branch of James River in Albemarle County.
- Topeco**; post village in Floyd County.
- Tophet**; post village in Fairfax County.
- Topnot**; post village in Shenandoah County.
- Topping**; post village in Middlesex County.
- Torega**; post village in Botetourt County.
- Torry**; mountains in Augusta County.
- Tory Knob**; summit in Bedford County. Elevation, 2,280 feet.
- Toashes**; post village in Pittsylvania County on the Southern Railway.
- Totaro**; post village in Brunswick County.
- Totopotomoy**; creek, a small right-hand tributary to Pamunkey River in Hanover County.
- Towell**; village in Lee County.
- Tower Hill**; mountains in Bath County. Elevation, 2,000 to 3,000 feet.
- Towerhill**; post village in Appomattox County.
- Tower Mountain**; summit in Albemarle County. Elevation, 1,000 feet.
- Town**; small left-hand branch of Clinch River in Tazewell County.
- Town**; small right-hand branch of New River in Grayson County.
- Town**; branch, a small right-hand tributary to James River in Botetourt County.
- Town**; creek, a small right-hand tributary to Walker Creek, rising in Bland County.
- Town**; creek, a small right-hand branch of Guest River in Wise County.
- Town**; point on Elizabeth River in Norfolk County.
- Town**; run, a small right-hand tributary to Potomac River in Fauquier County.
- Townsend**; post village in Northampton County.
- Trace**; branch, a small left-hand tributary to Levisa Fork in Buchanan County.
- Tract**; fork, a small left-hand tributary to New River in Pulaski County.
- Tract**; mountains in Wythe and Pulaski counties. Elevation 2,500 to 3,000 feet.
- Trade**; post village in Amelia County.
- Traders**; post village in Mathews County.
- Traffic**; post village in Lunenburg County.
- Trapp**; post village in Loudoun County.
- Travis**; post village in Prince Edward County.
- Trayfoot**; mountain in the Blue Ridge in Rockingham County.
- Treakles**; post village in Lancaster County.
- Tredway**; post village in Prince Edward County.
- Trelow**; village in Pittsylvania County.
- Trenholm**; post village in Powhatan County.
- Trenton Mills**; post village in Cumberland County.
- Trevilians**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 523 feet.
- Triangle**; post village in Nottoway County.
- Trice**; post village in Louisa County on the Chesapeake and Ohio Railway. Altitude, 1,816 feet.
- Triford**; post village in Rockbridge County.

- Trigg**; post village in Giles County on the Norfolk and Western Railway.
- Trilby**; post village in Northumberland County.
- Trimble**; mountains in Augusta County.
- Trimble**; post village in Highland County.
- Trinity**; post village in Botetourt County.
- Triplet**; post village in Brunswick County on the Southern Railway.
- Trix**; post village in Lunenburg County.
- Trone**; post village in Frederick County.
- Troublesome**; creek, a small left-hand branch of Clinch River in Scott County.
- Troublesome**; creek, a small left-hand tributary to Roanoke River in Campbell County.
- Troublesome**; creek, a small right-hand tributary to James River in Buckingham County.
- Trough**; run, a small left-hand tributary to Roanoke River in Bedford County.
- Trout**; creek, a small right-hand tributary to James River in Roanoke County.
- Troutdale**; post village in Grayson County.
- Troutville**; post village in Botetourt County.
- Trower**; post village in Accomac County.
- Trueblue**; post village in Orange County.
- Truhart**; post village in King and Queen County.
- Truitt**; post village in Dinwiddie County.
- Truxillo**; post village in Amelia County.
- Tuan**; post village in Stafford County.
- Tuckahoe**; creek, a small left-hand tributary to James River in Henrico County.
- Tuckahoe**; post village in Henrico County on the Chesapeake and Ohio Railway.
- Tucker**; post village in Buckingham County on the Norfolk and Western Railway.
- Tuckerhill**; post village in Westmoreland County.
- Tug**; post village in Grayson County.
- Tuggles Gap**; post village in Patrick County.
- Tulip**; post village in Frederick County.
- Tumbez**; village in Russell County.
- Tumbling**; creek, a small right-hand branch of North Fork of Holston River in Washington County.
- Tunis**; post village in Rockingham County.
- Tunstall**; post village in New Kent County on the Southern Railway.
- Turbeville**; post village in Halifax County.
- Turk**; gap in the Blue Ridge in Augusta County.
- Turk Mountain**; summit in Augusta County.
- Turk Mountain**; summit in Nelson County.
- Turkey**; run, a small left-hand tributary to Shenandoah River in Frederick County.
- Turkey**; run, a small right-hand tributary of Potomac River in Fauquier County.
- Turkey Cock**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Turkey Cock**; run, a small right-hand tributary to Potomac River in Fairfax County.
- Turkeycove**; post village in Lee County.
- Turkey Egg**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.
- Turkey Island**; creek, a small left-hand branch of James River in Henrico County.
- Turkey Mountain**; summit in Amherst County. Elevation, 1,500 feet.
- Turkey Mountain**; summit in Greene County. Elevation, 1,500 feet.
- Turman**; post village in Floyd County.
- Turnbull**; post village in Fauquier County.
- Turner**; post village in Brunswick County.

**Turners**; ford of Roanoke River in Bedford County.

**Turners**; ford of Roanoke River in Franklin County.

**Turnip**; creek, a small left-hand tributary to Roanoke River in Charlotte County.

**Turpin**; creek, a small right-hand tributary to James River in Buckingham County.

**Turtlerock**; post village in Floyd County.

**Tuscarora**; creek, a small right-hand tributary to Potomac River in Loudoun County.

**Tuscola**; post village in Dickenson County.

**Tusekiah**; creek, a small left-hand branch of Meherrin River in Lunenburg County.

**Tussocky**; creek, a small right-hand tributary to James River in Campbell County.

**Twedys**; post village in Campbell County.

**Twelve O'clock Knob**; summit in Roanoke County. Elevation, 2,707 feet.

**Twin**; small left-hand branch of Slate Creek in Buchanan County.

**Two Mile**; run, a small right-hand branch of Shenandoah River in Rockingham County.

**Twymans Mill**; post village in Madison County.

**Twymans Store**; post village in Spottsylvania County.

**Tye**; river, a small left-hand branch of James River formed by North and South forks in Nelson County.

**Tye River**; gap in the Blue Ridge in Nelson County.

**Tye River Depot**; post village in Nelson County on the Southern Railway. Altitude, 548 feet.

**Tygers**; creek, a small right-hand tributary to Jackson River in Alleghany County.

**Tylers**; post village in Hanover County.

**Tyro**; post village in Nelson County.

**Uggal**; post village in Southampton County.

**Ula**; post village in King and Queen County.

**Ullainee**; post village in Essex County.

**Unaka**; post village in Tazewell County.

**Union**; creek, a small right-hand tributary to James River in Rockbridge County.

**Unionhall**; post village in Franklin County.

**Unionlevel**; post village in Mecklenburg County on the Southern Railway.

**Union Mills**; post village in Fluvanna County.

**Unionville**; post village in Orange County on the Potomac, Fredericksburg and Piedmont Railroad. Altitude, 500 feet.

**Unison**; post village in Loudoun County.

**Unity**; post village in Southampton County.

**Uno**; post village in Madison County.

**Upper Elk**; creek, a small right-hand branch of Knox Creek, rising in Buchanan County.

**Upper Rockhouse**; small right-hand branch of Slate Creek, a tributary to Levisa Fork, in Buchanan County.

**Upperville**; town in Fauquier County. Population, 376.

**Upper Zion**; post village in Caroline County.

**Upright**; post village in Essex County.

**Upton Hill**; summit in Fairfax County.

**Urbanna**; post village in Middlesex County.

**Ursus**; post village in Grayson County.

**Utt**; post village in Carroll County.

**Vale**; post village in Fairfax County.

**Valentine**; creek, a small right-hand branch of Roanoke River in Pittsylvania County.

**Valentines**; post village in Brunswick County.

**Valeria**; post village in Nansemond County.

- Valley**; creek, a small left-hand tributary to South Fork of Holston River in Washington County.
- Valley**; creek, a small left-hand tributary to Clinch River, rising in Scott County.
- Valley Center**; post village in Highland County.
- Valleycreek**; post village in Scott County.
- Valley Mills**; post village in Augusta County.
- Van**; post village in Lee County.
- Vanburen Furnace**; post village in Shenandoah County.
- Vance**; post village in Pittsylvania County.
- Vancluse**; gold mine in Spottsylvania County.
- Vanderpool**; gap between Monterey and Back Creek mountains, caused by a tributary to James River.
- Vanderpool**; post village in Highland County.
- Vandola**; post village in Pittsylvania County.
- Vanlear**; post village in Augusta County.
- Varallo**; post village in Patrick County.
- Vareo**; post village in Louisa County.
- Variety Mills**; post village in Nelson County.
- Variety Springs**; post village in Augusta County on the Chesapeake and Ohio Railway.
- Varinagrove**; village in Henrico County.
- Varst**; post village in Madison County.
- Vaocluse**; post village in Frederick County on the Baltimore and Ohio Railroad.
- Vaughn**; post village in Floyd County.
- Vaughns**; creek, a small right-hand tributary to Appomattox River, between Prince Edward and Appomattox counties.
- Vaught**; small left-hand branch of Middle Fork of Holston River in Smyth County.
- Vawters Store**; post village in Louisa County.
- Veach**; post village in Lee County.
- Venable**; creek, a small left-hand tributary to James River in Fluvanna County.
- Venables**; bridge across Appomattox River, between Prince Edward and Buckingham counties.
- Venner**; post village in Prince Edward County.
- Venrick**; run, a small branch of Reed Creek in Wythe County.
- Venter**; post village in King William County.
- Vera**; post village in Appomattox County.
- Verano**; post village in Patrick County.
- Verbena**; post village in Page County.
- Verdant**; post village in Lee County.
- Verdierville**; post village in Orange County on the Potomac, Fredericksburg and Piedmont Railroad. Altitude, 514 feet.
- Verdon**; post village in Hanover County on the Chesapeake and Ohio Railway.
- Vermilion**; post village in Appomattox County.
- Verna**; post village in Southampton County.
- Vernonhill**; post village in Halifax County.
- Vernon Mills**; post village in Fauquier County.
- Vesta**; post village in Patrick County.
- Vestal**; post village in Washington County.
- Vesuvius**; post village in Rockbridge County on the Norfolk and Western Railway. Altitude, 1,417 feet.
- Vicar Switch**; post village in Montgomery County.
- Vick**; post village in Floyd County.
- Vicksville**; post village in Southampton County.
- Victoria**; mines in Rockbridge County.
- Vienna**; town in Fairfax County on the Southern Railway. Population, 317.

- Viewtown**; post village in Rappahannock County.
- View Tree**; mountains in Fauquier County. Elevation, 500 to 750 feet.
- Vigor**; post village in Louisa County.
- Villa**; post village in Franklin County.
- Village**; post village in Northumberland County.
- Vilna**; post village in Highland County.
- Vincent Store**; post village in Charlotte County.
- Vine**; post village in Princess Anne County.
- Vinita**; post village in Goochland County on the Chesapeake and Ohio Railway.
- Vinton**; town in Roanoke County on the Norfolk and Western Railway. Altitude, 910 feet. Population, 1,438.
- Virgilina**; town in Halifax County on the Southern Railway. Population, 200.
- Virginia Beach**; resort on the Atlantic coast in Princess Anne County on the Norfolk and Southern Railroad.
- Virginia City**; post village in Wise County on the Norfolk and Western Railway.
- Vivian**; post village in King George County.
- Void**; post village in Mecklenburg County.
- Volens**; post village in Halifax County.
- Volney**; post village in Grayson County.
- Vontay**; post village in Hanover County.
- Vulcan**; post village in Orange County.
- Wachapreague**; post village in Accomac County.
- Waddy**; post village in Spotsylvania County.
- Wades**; post village in Bedford County.
- Wadesville**; post village in Clarke County.
- Waidsboro**; post village in Franklin County on the Norfolk and Western Railway. Altitude, 1,260 feet.
- Wainwright**; post village in Grayson County.
- Wake**; post village in Middlesex County.
- Wakefield Station**; post village in Sussex County on the Norfolk and Western Railway.
- Wakema**; post village in King William County.
- Walcot**; post village in Floyd County.
- Waldelock**; post village in Hanover County.
- Waldrop**; post village in Louisa County.
- Walker**; creek, a right-hand tributary to New River, rising in Bland County and flowing northeast into New River.
- Walker**; creek, a small left-hand tributary to James River in Augusta County.
- Walker**; creek, a small tributary to Middle Fork of Holston River in Smyth County.
- Walker**; ford of James River in Amherst County.
- Walker**; mountains in Bath County. Elevation, 2,000 to 2,500 feet.
- Walker**; mountains extending from Washington to Bland counties. Elevation, 2,500 to 4,000 feet.
- Walkerford**; post village in Amherst County on the Chesapeake and Ohio Railway.
- Walkers**; creek, a small left-hand tributary to James River in Rockbridge County.
- Walkers**; mountains in Bath and Augusta counties. Elevation, 2,500 to 3,000 feet.
- Walkers**; post village in New Kent County on the Chesapeake and Ohio Railway.
- Walkerton**; post village in King and Queen County.
- Wallace**; branch, a small left-hand tributary to Roanoke River in Charlotte County.
- Wallace**; creek, a small right-hand branch of Appomattox River in Dinwiddie County.
- Wallace**; post village in Washington County on the Norfolk and Western Railway. Altitude, 1,880 feet.
- Wallaceton**; post village in Norfolk County.
- Wallen**; creek, a small left-hand branch of Powell River in Lee County.

**Wallen Ridge**; mountains in Lee County.

**Wallens Ridge**; mountains in the southeastern part of Lee County, extending southwest into Tennessee.

**Waller**; post village in Henry County on the Norfolk and Western Railway. Altitude, 730 feet.

**Walls Bridge**; post village in Surry County.

**Walnut**; branch, a small left-hand tributary to James River in Albemarle County.

**Walnuthill**; post village in Lee County.

**Walthall Store**; post village in Brunswick County.

**Walton**; fork, a small right-hand tributary to James River in Buckingham County.

**Walton Furnace**; post village in Wythe County.

**Waltons Store**; post village in Louisa County.

**Wampler**; small right-hand branch of Cripple Creek in Wythe County.

**Wampler**; post village in Dickenson County.

**Wan**; post village in Gloucester County.

**Waqua**; post village in Brunswick County.

**Ward**; small right-hand branch of Cripple Creek in Wythe County.

**Ward**; cove in Tazewell County.

**Wardgap**; post village in Carroll County.

**Wards**; fork, a small left-hand tributary to Roanoke River in Charlotte County.

**Wardsfork Mills**; post village in Charlotte County.

**Wards Mill**; branch, a small right-hand tributary to New River in Carroll County.

**Wards Mill**; post village in Carroll County.

**Wards Road**; ferry over Roanoke River in Pittsylvania County.

**Wardtown**; post village in Northampton County.

**Ware**; creek, a small right-hand branch of Rappahannock River in Caroline County.

**Warehouse**; post village in Mathews County.

**Wareneck**; post village in Gloucester County.

**Wares Wharf**; post village in Essex County.

**Warfield**; post village in Brunswick County on the Seaboard Air Line Railway.

**Warminster**; post village in Nelson County on the Chesapeake and Ohio Railway.

**Warm Spring**; mountains in Alleghany and Bath counties. Elevation, 2,000 to 4,000 feet.

**Warm Spring**; run, a small left-hand tributary to James River in Bath County.

**Warm Springs**; county seat of Bath County.

**Warner**; post village in Middlesex County.

**Warren**; county, situated in the northern part of the State and including a part of the Shenandoah Valley, its eastern boundary being the summit of the Blue Ridge. The surface consists in part of a level valley, and in part of the heavy spurs of the Blue Ridge; the altitude ranges from 500 to 3,300 feet upon the Blue Ridge. Area, 226 square miles. Population, 8,837—white, 7,372; negro, 1,463; foreign born, 40. County seat, Front Royal. The mean magnetic declination in 1900 was  $3^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western and the Southern railways.

**Warren**; post village in Albemarle County on the Chesapeake and Ohio Railway.

**Warrenton**; county seat of Fauquier County on the Southern Railway. Population, 1,627.

**Warsaw**; county seat of Richmond County.

**Warwick**; county, situated in the eastern part of the State on the north bank of James River on the Atlantic plain. The surface is low and level, and but little elevated above tide. Area, 85 square miles. Population, 4,888—white, 1,159; negro, 3,729; foreign born, 82. County seat, Denbigh. The mean magnetic declination in 1900 was  $4^{\circ}$ . The mean annual rainfall is 40 to 50 inches, and the temperature  $55^{\circ}$  to  $60^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.



**Warwick**; run, a small right-hand tributary to Jackson River in Highland County.

**Warwick Ridge**; mountains in Bath County. Elevation, 2,500 to 3,000 feet.

**Warwick Swamp**; small right-hand tributary to James River in Prince George County.

**Washikee**; post village in Greenesville County.

**Washington**; county, situated in the southwestern part of the State. It is drained by the three main forks of Holston River, and its surface consists mainly of the valley through which they flow, limited on the north by Clinch Mountain. The altitude ranges from 1,600 to 4,000 feet above sea level. Area, 605 square miles. Population, 28,995—white, 26,433; negro, 2,555; foreign born, 33. County seat, Abingdon. The main annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Virginia and Southwestern railways.

**Washington**; county seat of Rappahannock County. Population, 300.

**Washington**; point on the eastern branch of Elizabeth River in Norfolk County.

**Waskey Mills**; post village in Botetourt County.

**Wasp**; post village in Carroll County.

**Wat**; post village in Culpeper County.

**Watauga**; post village in Washington County on the Virginia-Carolina Railway.

**Watch**; run, a small right-hand tributary to James River in Chesterfield County.

**Waterfall**; post village in Prince William County.

**Waterford**; town in Loudoun County. Population, 383.

**Waterlick**; post village in Warren County on the Southern Railway. Altitude, 550 feet.

**Waterloo**; post village in Culpeper County on the Washington Southern Railway.

**Wateroak**; post village in Princess Anne County.

**Waterview**; post village in Middlesex County.

**Waterway**; post village in Princess Anne County.

**Watery**; mountains in Fauquier County. Elevation, 750 to 1,000 feet.

**Watkins**; post village in Halifax County on the Southern Railway.

**Watson**; creek, a small right-hand tributary to Appomattox River in Nottoway County.

**Watson**; post village in Loudoun County.

**Wattsboro**; post village in Lunenburg County.

**Wattsville**; post village in Accomac County.

**Waugh**; post village in Bedford County on the Chesapeake and Ohio Railway.

**Waughes**; ford of James River in Amherst County.

**Wauk**; point in Princess Anne County, extending into North Landing River.

**Waverly**; town in Sussex County on the Norfolk and Western and the Southern railways. Population, 493.

**Waxpool**; post village in Loudoun County.

**Way**; post village in Amherst County.

**Waycross**; post village in Highland County.

**Wayland**; post village in Scott County.

**Waynesboro**; town in Augusta County on the Chesapeake and Ohio Railway. Altitude, 1,295 feet. Population, 856.

**Weal**; post village in Pittsylvania County.

**Wealthia**; post village in Buckingham County.

**Weaver Knob**; summit in Bedford County. Elevation, 2,615 feet.

**Weavers**; creek, a small right-hand branch of Clinch River, rising in Russell County.

**Webb**; post village in Carroll County.

**Webb Mill**; creek, a small left-hand tributary to Appomattox River in Appomattox County.

**Webbs**; ford of Roanoke River in Bedford County.

**Weddle**; post village in Floyd County.



- Wedstone**; creek, a small left-hand branch of South Fork of Holston River in Smyth County.
- Weedonville**; post village in King George County.
- Weems**; post village in Lancaster County.
- Welbourne**; post village in Loudoun County.
- Welchburg**; post village in Scott County.
- Welches**; run, a small left-hand tributary to Roanoke River in Botetourt County.
- Welchs**; post village in Caroline County.
- Welcome**; post village in King George County.
- Wellford**; post village in Richmond County.
- Wellington**; post village in Prince William County on the Southern Railway.
- Wellville**; post village in Nottoway County on the Norfolk and Western Railway.
- Wellwater**; post village in Buckingham County.
- Welsh**; summit in Nelson County.
- Wenonda**; post village in Pittsylvania County.
- Wert**; post village in Appomattox County.
- Wesson**; post village in Lee County.
- West**; fork, a small right-hand tributary to New River in Grayson and Wythe counties.
- West**; mountain in Rockingham County. Elevation, 2,500 feet.
- West**; run, a small left-hand tributary to Shenandoah River in Frederick and Warren counties.
- West Appomattox**; county seat of Appomattox County.
- West Augusta**; post village in Augusta County.
- Westboro**; post village in Dinwiddie County.
- West Clifton Forge**; town in Alleghany County. Population, 367.
- Westend**; post village in Fairfax County.
- Westhope**; post village in Sussex County.
- Westland**; post village in Lancaster County.
- West Lynchburg**; post village in Campbell County.
- Westmoreland**; county, situated in the eastern part of the State on the Atlantic plain, fronting upon the Potomac. The surface is but little elevated above tide. It rises in the interior to altitudes of 100 feet or more. Area, 245 square miles. Population, 9,243—white, 4,381; negro, 4,861; foreign born, 37. County seat, Montross. The mean magnetic declination in 1900 was 4° 30'. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°.
- West Norfolk**; post village in Norfolk County on the Southern Railway.
- Westover**; post village in Charles City County.
- West Point**; town in King William County. Population, 1,307.
- Westview**; post village in Goochland County.
- Westwood**; post village in Hanover County.
- Wetsels**; post village in Greene County.
- Weyanoke**; post village in Charles City County.
- Weyers Cave**; post village in Augusta County on the Baltimore and Ohio Railroad. Altitude, 1,152 feet.
- Whaleyville**; post village in Nansemond County.
- Whealton**; post village in Lancaster County.
- Wheatfield**; post village in Shenandoah County.
- Wheatland**; post village in Loudoun County.
- Wheeler Mountain**; summit in Pittsylvania County. Elevation, 1,000 feet.
- Whetstone**; creek, a small left-hand tributary to Nottoway River in Nottoway County.
- Whipping**; creek, a small left-hand branch of Roanoke River in Campbell County.

**Whipponock**; creek, a small right-hand branch of Appomattox River in Dinwiddie County.

**Whiskey**; creek, a small left-hand tributary to Shenandoah River in Augusta County.

**Whispering**; creek, a small right-hand tributary to James River in Buckingham County.

**Whistle**; creek, a small left-hand tributary to James River in Rockbridge County.

**Whit**; post village in Clarke County.

**Whitacre**; post village in Frederick County.

**Whiteforge**; post village in Scott County.

**Whitgate**; post village in Giles County.

**Whitehall**; post village in Frederick County on the Chesapeake and Ohio Railway.

**Whitehouse**; small left-hand branch of South Fork of Roanoke River in Montgomery County.

**Whitehouse**; post village in New Kent County on the Southern Railway.

**Whitemarsh**; post village in Gloucester County.

**White Oak**; creek, a small left-hand branch of North Fork of Holston River in Smyth County.

**Whiteoak**; creek, a small left-hand tributary to Nottoway River in Dinwiddie County.

**White Oak**; creek, a small right-hand tributary to York River.

**White Oak**; run, a small right-hand tributary to Rappahannock River in Madison County.

**Whiteplains**; post village in Brunswick County.

**Whitepoint**; post village in Westmoreland County.

**Whitepost**; post village in Clarke County on the Norfolk and Western Railway.

**White Rock**; gap in Rich Patch Mountain caused by Cane Creek in Alleghany County.

**White Rock**; mountains in Smyth County. Elevation, 3,000 to 4,000 feet.

**Whiterock**; post village in Bedford County.

**White Rock Mountain**; summit in Rockbridge County.

**White Rocks**; summit on the southwestern edge of Mill Mountains. Altitude, 4,548 feet.

**Whites**; gap in the Blue Ridge in Amherst County.

**Whites**; post village in Caroline County.

**Whites**; run, a small left-hand tributary to James River in Rockbridge County.

**Whiteshoals**; post village in Lee County.

**Whitesides**; run, a small left-hand tributary to James River in Rockbridge County.

**Whitestone**; post village in Lancaster County.

**White Top**; creek, a left-hand tributary to South Fork of Holston River in Washington and Smyth counties.

**Whitetop**; post village in Grayson County. Altitude, 5,530 feet.

**Whitley**; small right-hand branch of Walker Creek, rising in Giles County.

**Whitley**; post village in Isle of Wight County.

**Whitley**; fork, a small right-hand tributary to Powell River in Wise County.

**Whitlock**; post village in Halifax County.

**Whitmell**; post village in Pittsylvania County.

**Whitney**; island of James River in Appomattox County.

**Whittles Depot**; post village in Pittsylvania County on the Southern Railway. Altitude, 812 feet.

**Whittles Mills**; post village in Lunenburg County.

**Wickliffe**; post village in Clarke County.

**Wicomico**; post village in Gloucester County.

**Wicomico Church**; post village in Northumberland County.

**Widewater**; post village in Stafford County on the Richmond, Fredericksburg and Potomac Railroad.

**Widner**; creek, a small left-hand branch of South Fork of Holston River in Washington County.

**Wiedman**; post village in Surry County.

**Wiehle**; town in Fairfax County on the Southern Railway. Population, 51.

**Wier**; post village in Highland County.

**Wiggington Knob**; summit in Bedford County. Elevation, 2,461 feet.

**Wightman**; post village in Mecklenburg County.

**Wilburn**; bridge across Appomattox River from Buckingham to Prince Edward County.

**Wilburn**; post village in Lunenburg County.

**Wildcat**; summit in Wise County.

**Wild Cat Knob**; summit in Bedford County. Elevation, 2,000 feet.

**Wild Cat Mountain**; summit in Botetourt County.

**Wilderness**; post village in Orange County.

**Wilderness**; run, a small right-hand tributary to Rappahannock River in Spottsylvania County.

**Wildway**; post village in Appomattox County.

**Wiles**; village in Pittsylvania County.

**Wilhoit**; post village in Albemarle County.

**Wilkie Ridge**; summit in Rockbridge County.

**Willard**; post village in Loudoun County.

**Willcox Wharf**; post village in Charles City County.

**Williamsburg**; county seat of James City County, but independent in government. Population, 2,044.

**Williams Mills**; post village in Lunenburg County.

**Williamsville**; post village in Bath County.

**Williams Wharf**; post village in Mathews County.

**Willis**; post village in Floyd County.

**Willis**; run, a right-hand branch of James River in Buckingham and Cumberland counties.

**Willis Mountain**; summit in Buckingham County. Elevation, 1,159 feet.

**Willoughby**; bay on the coast north of Norfolk from Hampton Roads in Princess Anne County.

**Willoughby Beach**; post village in Norfolk County.

**Willoughby Spit**; point of sand dividing Willoughby Bay from Chesapeake Bay in Princess Anne County.

**Willow**; village in Amherst County.

**Willowbrook**; post village in Louisa County.

**Willowspring**; post village in Russell County.

**Wilmington**; post village in Fluvanna County.

**Wilson**; creek, a small left-hand tributary to James River in Alleghany, Bath, and Highland counties.

**Wilson**; creek, a small right-hand branch of New River in Grayson County.

**Wilson**; creek, a small right-hand tributary to James River in Botetourt County.

**Wilson Falls**; run, a small left-hand tributary to James River in Rockbridge County.

**Wilsons**; post village in Dinwiddie County.

**Wilton**; post village in Middlesex County on the Chesapeake and Ohio Railway. Altitude, 996 feet.

**Winchester**; county seat of Frederick County, but independent in government. Population, 5,161.

- Winder**; post village in Wise County on the Baltimore and Ohio Railroad. Altitude, 717 feet.
- Windsor Station**; post village in Isle of Wight County on the Norfolk and Western Railway.
- Windy**; gap of the Blue Ridge in Franklin County.
- Windy**; post village in Amherst County.
- Wine**; post village in Shenandoah County.
- Winfall**; post village in Campbell County on the Norfolk and Western Railway. Altitude, 848 feet.
- Winfrey**; post village in Culpeper County.
- Wingfield Mountain**; summit in Bedford County. Elevation, 1,299 feet.
- Wingina**; post village in Nelson County on the Chesapeake and Ohio Railway.
- Wingo**; post village in Giles County.
- Winnecum**; creek, a small right-hand tributary to Appomattox River in Nottoway County.
- Winnie**; post village in Nottoway County.
- Winston**; post village in Culpeper County on the Southern Railway.
- Winterham**; post village in Amelia County.
- Winterpock**; creek, a small left-hand branch of Appomattox River in Chesterfield County.
- Winterpock**; post village in Chesterfield County on the Farmville and Powhatan Railroad.
- Winticomack**; creek, a small right-hand branch of Appomattox River in Amelia County.
- Wirtz**; post village in Franklin County on the Norfolk and Western Railway.
- Wise**; county, situated in the southwestern part of the State. Its area consists in part of an alternation of narrow ridges and valleys, while the northern part lies on the Alleghany plateau, which is here deeply dissected into ridges and gorges. It is drained mainly by Powell River. Area, 413 square miles. Population, 19,653—white, 17,688; negro, 1,965; foreign born, 393. County seat, Wise. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Interstate railways.
- Wise**; county seat of Wise County on the Virginia and Kentucky Railroad.
- Wiseville**; post village in Chesterfield County.
- Wishart**; post village in Accomac County.
- Witcher Knob**; summit in Carroll County. Elevation, 2,500 to 2,912 feet.
- Witchers**; creek, a small left-hand branch of Roanoke River in Bedford County.
- Wittens Mills**; post village in Tazewell County on the Norfolk and Western Railway.
- Witts**; post village in Nelson County.
- Woburn**; post village in Mecklenburg County.
- Wolf**; branch, a small right-hand tributary to New River in Carroll County.
- Wolf**; creek, a small left-hand branch of Roanoke River in Roanoke and Bedford counties.
- Wolf**; creek, a right-hand branch of New River, rising in Bland County.
- Wolf**; creek, a small right-hand branch of New River, rising in Tazewell County and flowing northeast to where it empties into New River.
- Wolf**; creek, a small right-hand tributary to South Fork of Holston River in Washington County.
- Wolf**; run, a small left-hand tributary to North Fork of Holston River, rising in Washington County.
- Wolf Creek**; mountains in Giles and Bland counties. Elevation, 2,000 to 3,000 feet.
- Wolfglade**; post village in Carroll County.
- Wolfpen**; small left-hand branch of Slate Creek in Buchanan County.
- Wolf Pen**; branch, a small left-hand tributary to Walker Creek in Bland County.

- Wolf Pen**; branch, a small right-hand tributary to Walker Creek, rising in Bland County.
- Wolf Ridge**; mountains in Rockingham and Augusta counties.
- Wolfrun**; post village in Washington County.
- Wolftown**; post village in Madison County.
- Wolftrap**; post village in Halifax County on the Southern Railway.
- Wolf Trap Shoal**; run, a small right-hand tributary to Potomac River in Fairfax County.
- Woltz**; post village in Carroll County.
- Wood**; post village in Scott County.
- Woodbridge**; post village in Prince William County.
- Woodburn**; post village in Loudoun County.
- Woodend**; post village in Lunenburg County.
- Woodford**; post village in Caroline County.
- Woodlawn**; post village in Carroll County.
- Woodridge**; post village in Albemarle County.
- Woods**; run, a small left-hand tributary to James River in Rockbridge County.
- Woods Crossroads**; post village in Gloucester County.
- Woods Mountain**; summit in Buckingham County.
- Woods Mountain**; summit in Nelson County.
- Woodstock**; gap between Three Top and Powells mountains in Shenandoah County.
- Woodstock**; county seat of Shenandoah County on the Baltimore and Ohio Railroad. Altitude, 820 feet. Population, 1,069.
- Woodview**; post village in Brunswick County.
- Woodville**; post village in Rappahannock County.
- Woody**; creek, a small right-hand tributary to Appomattox River in Nottoway County.
- Woolsey**; post village in Prince William County.
- Woolwine**; post village in Patrick County.
- Worlds**; post village in Pittsylvania County.
- Worrells**; post village in Southampton County.
- Worsham**; post village in Prince Edward County.
- Wreck Island**; creek, a small right-hand tributary to James River in Appomattox County.
- Wren**; post village in Charlotte County on the Southern Railway.
- Wright Valley**; creek, a small tributary to Bluestone River in Tazewell County.
- Wyatt**; post village in Franklin County.
- Wyche**; post village in Brunswick County.
- Wylies**; run, a small right-hand tributary to Jackson River in Alleghany County.
- Wylliesburg**; post village in Charlotte County.
- Wyndham**; post village in Powhatan County.
- Wysor**; post village in Pulaski County.
- Wythe**; county, situated in the southwestern part of the State in the Appalachian Valley. It is limited on the south by Iron Mountain and on the north by Walker Mountain. It is drained by Reed and Cripple creeks, tributaries to New River. The surface consists of an alternation of narrow ridges and valleys, constituting a part of the Appalachian Valley. Area, 474 square miles. Population, 20,437—white, 17,653; negro, 2,783; foreign born, 108. County seat, Wytheville. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.
- Wytheville**; county seat of Wythe County on the Norfolk and Western Railway. Altitude, 2,230 feet. Population, 3,003.
- Yact**; post village in Grayson County.

**Yak**; post village in Pittsylvania County.

**Yale**; post village in Sussex County on the Southern Railway.

**Yancey**; post village in Rockingham County on the Norfolk and Western Railway.

**Yancey Mills**; post village in Albemarle County.

**Yards**; post village in Tazewell County.

**Yellow**; creek, a small left-hand branch of Guest River in Wise County.

**Yellow**; right-hand branch of Powell River in Lee County.

**Yellowbranch**; post village in Campbell County.

**Yellow Mountain**; summit in Roanoke County. Elevation, 2,191 feet.

**Yellow Sulphur Springs**; post village in Montgomery County.

**Yokum**; village in Lee County.

**York**; county, situated in the eastern part of the State on the south side of York River at its mouth, and on the west shore of Chesapeake Bay. It is level and but little elevated. Area, 124 square miles. Population, 7,482—white, 3,401; negro, 4,081; foreign born, 42. County seat, Yorktown. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the temperature 55° to 60°. The county is traversed by the Chesapeake and Ohio Railway.

**York**; river, which heads in two forks, known as the Mattaponi and Pamunkey, which have their sources in the Piedmont region. They unite at Westpoint, which is commonly regarded as the head of York River. Below this point it has the aspect of a tidal estuary. It flows into Chesapeake Bay below Yorktown. It is navigable to the forks.

**Yorktown**; county seat of York County. Population, 151.

**Yost**; post village in Bath County.

**Youngs**; post village in Spottsylvania County on the Norfolk and Western Railway. Altitude, 1,301 feet.

**Yuma**; post village in Scott County.

**Za**; post village in Orange County.

**Zacata**; post village in Westmoreland County.

**Zack**; post village in Rockbridge County.

**Zanoni**; post village in Gloucester County.

**Zanto**; post village in Louisa County.

**Zaza**; post village in Essex County.

**Zenda**; post village in Rockingham County.

**Zenobia**; post village in Washington County.

**Zepp**; post village in Shenandoah County.

**Zero**; post village in Brunswick County.

**Zetta**; post village in Augusta County.

**Zingara**; post village in Brunswick County.

**Zion**; post village in Louisa County.

**Zion Mills**; post village in Lee County.

**Zions Hill**; village in Botetourt County.

**Zoar**; post village in Chesterfield County.

**Zollman**; post village in Rockbridge County.

**Zulla**; post village in Fauquier County.

**Zuni**; post village in Isle of Wight County on the Norfolk and Western Railway.





## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 22.]

The publications of the United States Geological Survey consist of (1) **Annual Reports**, (2) **Monographs**, (3) **Professional Papers**, (4) **Bulletins**, (5) **Mineral Resources**, (6) **Water-Supply and Irrigation Papers**, (7) **Topographic Atlas of United States—folios and separate sheets thereof**, (8) **Geologic Atlas of United States—folios thereof**. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the fortieth in Series F, the complete list of which follows (all are bulletins thus far):

### SERIES F, GEOGRAPHY.

5. Dictionary of altitudes in United States, by Henry Gannett. 1884. 325 pp. (Out of stock; see Bulletin 160.)
6. Elevations in Dominion of Canada, by J. W. Spencer. 1884. 43 pp. (Out of stock.)
13. Boundaries of United States and of the several States and Territories, with historical sketch of territorial changes, by Henry Gannett. 1885. 125 pp. (Out of stock; see Bulletin 171.)
48. On form and position of sea level, by R. S. Woodward. 1888. 88 pp. (Out of stock.)
49. Latitudes and longitudes of certain points in Missouri, Kansas, and New Mexico, by R. S. Woodward. 1889. 133 pp.
50. Formulas and tables to facilitate the construction and use of maps, by R. S. Woodward. 1889. 124 pp. (Out of stock.)
70. Report on astronomical work of 1889 and 1890, by R. S. Woodward. 1890. 79 pp.
72. Altitudes between Lake Superior and Rocky Mountains, by Warren Upham. 1891. 220 pp.
76. Dictionary of altitudes in United States (second edition), by Henry Gannett. 1891. 393 pp. (Out of stock; see Bulletin 160.)
115. Geographic dictionary of Rhode Island, by Henry Gannett. 1894. 31 pp.
116. Geographic dictionary of Massachusetts, by Henry Gannett. 1894. 126 pp.
117. Geographic dictionary of Connecticut, by Henry Gannett. 1894. 67 pp.
118. Geographic dictionary of New Jersey, by Henry Gannett. 1894. 131 pp.
122. Results of primary triangulation, by Henry Gannett. 1894. 412 pp., 17 pls. (Out of stock.)
123. Dictionary of geographic positions, by Henry Gannett. 1895. 183 pp., 1 map. (Out of stock.)
154. Gazetteer of Kansas, by Henry Gannett. 1898. 246 pp., 6 pls.
160. Dictionary of altitudes in United States (third edition), by Henry Gannett. 1899. 775 pp. (Out of stock.)
166. Gazetteer of Utah, by Henry Gannett. 1900. 43 pp., 1 map.
169. Altitudes in Alaska, by Henry Gannett. 1900. 13 pp.
170. Survey of boundary line between Idaho and Montana from international boundary to crest of Bitterroot Mountains, by R. U. Goode. 1900. 67 pp., 14 pls.
171. Boundaries of United States and of the several States and Territories, with outline of history of all important changes of territory (second edition), by Henry Gannett. 1900. 142 pp., 53 pls. (Out of stock.)
174. Survey of northwestern boundary of United States, 1857-1861, by Marcus Baker. 1900. 78 pp., 1 pl.
175. Triangulation and spirit leveling in Indian Territory, by C. H. Fitch. 1900. 141 pp., 1 pl.
181. Results of primary triangulation and primary traverse, fiscal year 1900-1901, by H. M. Wilson, J. H. Renshawe, E. M. Douglas, and R. U. Goode. 1901. 240 pp., 1 map.
183. Gazetteer of Porto Rico, by Henry Gannett. 1901. 51 pp.

185. Results of spirit leveling, fiscal year 1900-1901, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1901. 219 pp.
187. Geographic dictionary of Alaska, by Marcus Baker. 1901. 446 pp. (Out of stock.)
190. Gazetteer of Texas, by Henry Gannett. 1902. 162 pp., 8 pls. (Out of stock.)
192. Gazetteer of Cuba, by Henry Gannett. 1902. 113 pp., 8 pls. (Out of stock.)
194. Northwest boundary of Texas, by Marcus Baker. 1902. 51 pp., 1 pl.
196. Topographic development of the Klamath Mountains, by J. S. Diller. 1902. 69 pp., 13 pls.
197. The origin of certain place names in the United States, by Henry Gannett. 1902. 280 pp. (Out of stock.)
201. Results of primary triangulation and primary traverse, fiscal year 1901-2, by H. M. Wilson, J. H. Renshaw, E. M. Douglas, and R. U. Goode. 1902. 164 pp., 1 pl.
214. Geographic tables and formulas, compiled by S. S. Gannett. 1903. 284 pp.
216. Results of primary triangulation and primary traverse, fiscal year 1902-3, by S. S. Gannett. 1903. 222 pp., 1 pl.
224. Gazetteer of Texas (second edition), by Henry Gannett. 1904. 177 pp., 7 pls.
226. Boundaries of the United States and of the several States and Territories, with an outline of the history of all important changes of territory (third edition), by Henry Gannett. 1904. 145 pp., 54 pls.
230. Gazetteer of Delaware, by Henry Gannett. 1904. 15 pp.
231. Gazetteer of Maryland, by Henry Gannett. 1904. 84 pp.
232. Gazetteer of Virginia, by Henry Gannett. 1904. 159 pp.

Correspondence should be addressed to

The DIRECTOR,

UNITED STATES GEOLOGICAL SURVEY,

WASHINGTON, D. C.

JUNE, 1904.

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**Gannett, Henry.**

Author.

... A gazetteer of Virginia, by Henry Gannett.  
Washington, Gov't print. off., 1904.

159, iii p. 23½<sup>cm</sup>. (U. S. Geological survey. Bulletin no. 232.)  
Subject series: F, Geography, 40.

**Gannett, Henry.**

Subject.

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Washington, Gov't print. off., 1904.

159, iii p. 23½<sup>cm</sup>. (U. S. Geological survey. Bulletin no. 232.)  
Subject series: F, Geography, 40.

**U. S. Geological survey.**

Series.

Bulletins.  
no. 232. Gannett, Henry. A gazetteer of Virginia.  
1904.

**U. S. Dept. of the Interior.**

Reference.

see also  
**U. S. Geological survey.**



Bulletin No. 233

J. C. Mann

Series F, Geography, 41

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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A

GAZETTEER OF WEST VIRGINIA

BY

HENRY GANNETT



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., March 9, 1904.*

SIR: I have the honor to transmit herewith, for publication as a bulletin, a gazetteer of West Virginia.

Very respectfully,

HENRY GANNETT,  
*Geographer.*

HON. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*





# A GAZETTEER OF WEST VIRGINIA.

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By HENRY GANNETT.

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## GENERAL DESCRIPTION OF THE STATE.

The State of West Virginia was cut off from Virginia during the civil war and was admitted to the Union on June 19, 1863. As originally constituted it consisted of 48 counties; subsequently, in 1866, it was enlarged by the addition of two counties, Berkeley and Jefferson, which were also detached from Virginia.

The boundaries of the State are in the highest degree irregular. Starting at Potomac River at Harpers Ferry, the line follows the south bank of the Potomac to the Fairfax Stone, which was set to mark the headwaters of the North Branch of Potomac River; from this stone the line runs due north to Mason and Dixon's line, i. e., the southern boundary of Pennsylvania; thence it follows this line west to the southwest corner of that State, in approximate latitude  $39^{\circ} 43\frac{1}{2}'$  and longitude  $80^{\circ} 31'$ , and from that corner north along the western boundary of Pennsylvania until the line intersects Ohio River; from this point the boundary runs southwest down the Ohio, on the northwestern bank, to the mouth of Big Sandy River. The Big Sandy and Tug Fork nearly to its head then form the boundary. Thence the line follows a very irregular course, turning east and northeast, but with frequent breaks in direction as it coincides with the irregular boundaries of the counties which were set off to form the State.

The topographic features of West Virginia are simple. Nearly all the area of the State consists of a greatly dissected plateau which slopes from a crest line near the eastern boundary in a northwesterly direction to Big Sandy and Ohio rivers. Ohio River at the mouth of the Big Sandy, which is the lowest part of the State with the exception of the territory surrounding Harpers Ferry, has an altitude of about 500 feet, and the plateau level along the Ohio is 200 or 300 feet higher. From this level, which may be taken as the base of the plateau, the land rises to the northeast, and along the Allegheny Front has an average altitude of perhaps 4,000 feet. The streams of this plateau have cut deep gorges, and in most parts of it are so numerous that the plateau is reduced to an alternation of sharp ridges and deep, narrow canyons.

The principal rivers are the Ohio, which borders the State on the west and which is navigable throughout the portion bordering the boundary; the Big Sandy, which is navigable for small craft up to the junction of Tug and Levisa forks; the Guyandot; the Kanawha, which is navigable nearly to the falls above Charleston; the Little Kanawha; and the Monongahela. All of these are tributaries of the Ohio, and head in the plateau, with the exception of Kanawha River, the main branch of which, known as New River, heads in northwestern North Carolina and cuts a gorge throughout the entire breadth of the plateau in its course to the Ohio.

The mean altitude of the State above sea level is estimated at 1,500 feet. The areas within certain zones of altitude are as follows:

*Areas in West Virginia at different altitudes.*

	Square miles.
500-1,000 .....	7, 900
1,000-1,500 .....	6, 000
1,500-2,000 .....	4, 200
2,000-3,000 .....	5, 280
3,000-4,000 .....	1, 200
4,000-5,000 .....	200

The gross area of the State—that is, including all bodies of water as well as land—is 24,780 square miles. The land area, after deducting the river surface, is 24,645 square miles.

The first census of population and industries of the State was taken in 1870. The following table shows the population at that and at each subsequent census, with the rate of increase:

*Census of West Virginia at each census since 1870.*

Year.	Population.	Rate of increase.
		<i>Per cent.</i>
1870.....	442, 014	.....
1880.....	618, 457	39. 9
1890.....	762, 794	23. 3
1900.....	958, 800	25. 7

In 1900 the population was essentially of a rural character, as there were only four cities which had more than 8,000 inhabitants each, namely, Wheeling, Huntington, Parkersburg, and Charleston. The combined population of these four cities was only 73,603, or 8 per cent of the total population of the State, while in the United States at large one-third of all the people live in cities of this class.

The average number of persons to a family was 5.1, a number exceeded by Texas only, in which there were 5.2 persons to a family.

Males were largely in excess of females, the proportion being 521 males to 479 females. This condition is unusual in the eastern part of the country, there being no other State east of the Mississippi in which the proportion of males is as large as in West Virginia.

Another unusual feature is represented by the race distribution. Out of every 1,000 persons 955 were white and but 45 colored, while in the District of Columbia and Maryland the proportion of negroes is vastly greater. The proportion of foreign born was also very small; out of 1,000 persons 977 were born in the United States and only 23 in foreign countries. Of all the States of the Union, West Virginia has the largest proportion of native white inhabitants; out of every thousand inhabitants no fewer than 922 were whites born in the United States. There are States having a smaller proportion of foreign blood, but those States, like Mississippi, have a large proportion of negroes.

Persons more than 10 years of age who were unable to read and write comprised 11.4 per cent of all the inhabitants of the State, 10.3 per cent being white inhabitants, and 32.3 per cent being negroes.

Of the whole number of inhabitants of the State over 10 years of age, 46.4 per cent were engaged in gainful occupations. Of this number, nearly one-half, or 46.6 per cent, were engaged in agricultural pursuits, 3.6 per cent in professions, 17.3 per cent in domestic and other personal service, 11.7 per cent in trade and transportation, and 20.8 per cent in manufactures and mining.

Agriculture is the principal industry of the State. In 1900 there were 92,874 farms. Of these, nearly four-fifths, or 78.2 per cent, were owned by their occupiers, the remainder being rented either for a money rental or for a share of the proceeds, the latter plan being the one most in vogue. The total area in farms amounted to 10,654,513 acres. Of this, a little more than half, 5,498,981 acres, was under cultivation; this is 51.6 per cent of the entire farm area and 34.9 per cent, or more than a third, of the whole area of the State. The average size of the farms was 114.7 acres, considerably less than the average of the United States. The total value of the farms, including land, buildings, implements, and live stock—in short, the entire farm capital—was \$203,907,349, an average per farm of \$2,196.

The following table shows the distribution of the value among the different items:

*Value of farm lands, buildings, and accessories in West Virginia.*

Land .....	\$134, 269, 110
Buildings .....	34, 026, 560
Implements .....	5, 040, 420
Live stock .....	30, 571, 259

The farm products had a value of \$44,768,979, an average value per

farm of \$482. This was 22 per cent of the whole amount of farming capital. The following table shows the divisions of live stock and farm products:

*Statistics of live stock and farm products in West Virginia.*

Cattle .....	639, 782	Wheat.....bushels..	4, 326, 150
Horses .....	185, 188	Oats.....do....	1, 833, 840
Mules .....	11, 354	Potatoes.....do....	2, 245, 821
Sheep .....	968, 843	Hay .....	644, 535
Swine .....	442, 844	Tobacco.....pounds..	3, 087, 140
Corn .....	16, 610, 730	Dairy produce.....	\$5, 088, 153

Although primarily a farming State, West Virginia has a considerable number of manufactures and they are rapidly increasing in importance. These manufactures are mainly in the narrow strip in the north lying between Pennsylvania and Ohio River, in and about Wheeling.

The total number of manufacturing establishments in the State was 4,418. They had a capital of \$55,904,238, employed 33,272 hands, and paid \$12,969,237 in wages. Raw materials cost \$43,006,880, and the products had a gross value of \$74,838,330. The following table gives the principal articles of manufacture, with the value of the products:

*Statistics of principal manufactures in West Virginia.*

Steam railway cars .....	\$2, 943, 557
Clay products .....	1, 541, 239
Coke .....	3, 529, 241
Flour.....	5, 541, 353
Foundry products .....	1, 401, 852
Glass .....	1, 871, 795
Iron and steel.....	16, 514, 212
Lumber .....	10, 612, 837
Leather .....	3, 210, 753

In mineral products West Virginia takes high rank, especially in coal, petroleum, and natural gas. The coal produced in 1901 amounted to 24,068,402 short tons, and was exceeded only by Pennsylvania and Illinois. In making coke from its coal it was exceeded by Pennsylvania only, the amount produced being 2,283,700 short tons. Its petroleum production was 14,177,126 barrels, which was exceeded only by Pennsylvania and Ohio. Its natural gas had a value of \$3,954,472. Coal, petroleum, and natural gas are found in various places throughout the State. Indeed, most of the plateau seems to be underlain with coal, and within this area petroleum and natural gas may exist.

Of iron ore Virginia and West Virginia together produced 925,394 long tons, and West Virginia smelted 166,597 long tons.

Originally West Virginia was entirely covered by dense forests. In the higher country these were largely coniferous. In Pocahontas

County, above the crest of the Allegheny Plateau, are found extensive tracts covered with white pine similar to that of New England and the Lake States. Farther down the slopes the hard woods become relatively more abundant, and the coniferous species disappear near Ohio River. In the lower portions of the State, near Ohio River, these forests have been largely cut away to make way for cultivation of the soil and to supply needed lumber, but in the eastern part there are vast tracts still untouched by lumbermen. It is estimated that timber still covers not less than 18,400 square miles, or 73 per cent of the area of the State, and that the State still contains not far from 35,000,000,000 feet B. M. In 1900 the Census reported that a little over half a billion feet were cut for lumber purposes, besides that used for firewood, fence posts, etc.

## GAZETTEER.

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- Aaron;** branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Aaron;** creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Aaron;** creek, a left-hand branch of Deckers Creek in Monongalia County.
- Aaron;** fork, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Aarons;** post village in Kanawha County.
- Abb Camp;** branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Abbot;** creek, a right-hand branch of Fifteenmile Fork of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Abbott;** branch, a small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.
- Abbott;** post village in Upshur County.
- Aberdeen;** post village in Lewis County.
- Abram;** creek, a right-hand tributary to North Fork of Potomac River in Mineral and Grant counties.
- Absalom;** run, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Academy;** post village in Pocahontas County.
- Acme;** post village in Kanawha County on the Chesapeake and Ohio Railway.
- Acord;** branch, a small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Ada;** post village in Mercer County on the Norfolk and Western Railway and on East River. Altitude, 2,225 feet.
- Adairs;** run, a small left-hand tributary to New River in Mercer County.
- Adaline;** post village in Marshall County.
- Adam;** post village in Calhoun County.
- Adamston;** post village in Harrison County.
- Adkin;** post village in Wyoming County.
- Adkin;** branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Adkins;** branch, a small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Adkins;** branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Adkins;** fork, a small left-hand branch of Rich Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Adkins;** fork, a very small left-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Adkins;** fork, a very small left-hand tributary to Spruce Fork of Little Coal River in Logan County.



**Adlai**; post village in Pleasants County.

**Adley**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Adolph**; post village in Randolph County.

**Adonijah**; fork, a left-hand branch of Big Sycamore Creek, a tributary to Elk River, in Clay County.

**Adonis**; post village in Tyler County.

**Advent**; post village in Jackson County.

**Afton**; post village in Preston County.

**Akron**; post village in Tyler County.

**Alam**; village in Greenbrier County on Meadow River.

**Alaska**; post village in Mineral County.

**Alaska**; station in Fayette County on the Chesapeake and Ohio Railway and on New River.

**Albatross**; post village in Putnam County.

**Albert**; post village in Tucker County on the Virginia and Southwestern Railway.

**Albion**; Post village in Nicholas County.

**Albright**; post village in Preston County.

**Alderson**; branch, a very small right-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.

**Alderson**; county seat of Monroe County on the Chesapeake and Ohio Railway. Altitude, 1,548 feet. Population, 518.

**Aldrich**; branch, a small right-hand tributary to Cranberry River in Webster County.

**Aldrich**; fork, an indirect left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Aleck**; run, a small left-hand tributary to Right Fork of Buckhannon River in Upshur County.

**Alexander**; post village in Upshur County.

**Alfred**; post village in Gilmer County on the Baltimore and Ohio Railroad.

**Algeria**; post village in Pleasants County.

**Algoma**; village in McDowell County, on the Norfolk and Western Railroad.

**Alice**; post village in Gilmer County.

**Alkires Mills**; post village in Lewis County.

**Allegheny Front**; the escarpment of the Allegheny Plateau in Pendleton, Grant, and Mineral counties. Elevation, 2,000 to 4,500 feet.

**Allegheny Plateau**; westernmost member of the Appalachian system, extending as a greatly dissected plateau through southern New York, Pennsylvania, and Maryland, occupying the greater part of West Virginia, and, under the name of Cumberland Plateau, extending across eastern Kentucky and middle Tennessee into northern Alabama.

**Allen**; creek, a small right-hand tributary to Guyandot River in Raleigh and Wyoming counties.

**Allen**; creek, a small left-hand branch of Birch River, a tributary to Elk River, in Webster and Nicholas counties.

**Allen Knob**; summit in Greenbrier County. Altitude, 3,704 feet.

**Allensville**; post village in Berkeley County.

**Alliance**; post village in Harrison County.

**Alma**; post village in Tyler County.

**Alpena**; post village in Randolph County.

**Alpha**; post village in Doddridge County.

**Alta**; post village in Greenbrier County.

**Altizer**; post village in Calhoun County.

- Alton**; post village in Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,813 feet.
- Alum**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in Mingo County.
- Alum**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Alumbridge**; post village in Lewis County.
- Alvaro**; post village in Kanawha County.
- Alvon**; post village in Greenbrier County.
- Alvy**; post village in Tyler County.
- Amblersburg**; post village in Preston County on the Baltimore and Ohio Railroad.
- Amboy**; post village in Preston County.
- Ambrosia**; post village in Mason County on the Ohio Central Lines Railroad.
- Amma**; post village in Roane County.
- Amos**; fork, a small right-hand branch of Old Lick Creek, a tributary to Holly River, in Webster County.
- Amos**; post village in Marion County.
- Amos**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River. in Webster County.
- Amos**; run, a small creek in Webster County.
- Anchor**; post village in Boone County.
- Andy**; post village in Wetzel County.
- Angel**; fork, a small left-hand tributary to Coal River in Kanawha and Putnam counties.
- Angel**; post village in Kanawha County.
- Angerona**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Anglin**; creek, a small right-hand branch of Meadow River, tributary to Gauley River, in Nicholas County.
- Anita**; village in Marion County.
- Ann**; run, a right-hand branch of Simpson Creek in Harrison County.
- Annamoriah**; post village in Calhoun County.
- Ansted**; town in Fayette County on a branch of the Chesapeake and Ohio Railway. Altitude, 1,225 feet. Population, 1,090.
- Anthem**; post village in Wetzel County.
- Anthony**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Anthony**; creek, a left-hand tributary to Greenbrier River in Greenbrier County.
- Anthony**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- Antioch**; post village in Mineral County.
- Apgah**; post village in Kanawha County.
- Applegrove**; post village in Mason County on the Baltimore and Ohio Railroad.
- Aracoma**; town in Logan County. Population, 444.
- Arbovale**; post village in Pocahontas County.
- Arbuckle**; creek, a small left-hand tributary to New River in Fayette County.
- Arbuckle**; post village in Mason County on the Ohio Central Lines.
- Arbutus**; post village in Kanawha County.
- Arca**; post village in Wirt County.
- Arches**; post village in Wetzel County.
- Arden**; post village in Barbour County on the Baltimore and Ohio Railroad.
- Arkansas**; branch, a very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Arlee**; post village in Mason County.
- Arlington**; post village in Upshur County on the Norfolk and Western Railway.

- Armour**; creek, a small right-hand tributary to Kanawha River in Kanawha and Putnam counties.
- Armstrong**; creek, a left-hand tributary to Kanawha River in Fayette County.
- Arnettville**; post village in Monongalia County.
- Arnold**; post village in Lewis County on the Baltimore and Ohio Railroad.
- Arnoldsburg**; post village in Calhoun County.
- Arroyo**; post village in Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Arthur**; post village in Grant County.
- Arvilla**; post village in Pleasants County.
- Asbury**; post village in Greenbrier County.
- Ash**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha and Fayette counties.
- Ash**; fork, a small right-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Ash**; post village in Mason County.
- Ashbridge**; branch, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Ash Camp**; run, a right-hand branch of Long Drain in Wetzel County.
- Ashland**; post village in McDowell County.
- Ashley**; post village in Doddridge County on the Norfolk and Western Railway.
- Ashton**; post village in Mason County on the Baltimore and Ohio Railroad.
- Aspinwall**; post village in Lewis County.
- Assurance**; post village in Monroe County.
- Astor**; post village in Taylor County.
- Athens**; post village in Mercer County.
- Atkinsville**; post village in Raleigh County.
- Atlas**; post village in Upshur County.
- Atwood**; post village in Tyler County.
- Auburn**; post village in Ritchie County.
- Audra**; post village in Barbour County.
- Augusta**; post village in Hampshire County.
- Aurora**; post village in Preston County on the Baltimore and Ohio Railroad.
- Austen**; post village in Preston County on the Baltimore and Ohio Railroad.
- Auvil**; post village in Tucker County.
- Avon**; post village in Doddridge County.
- Avondale**; post village in McDowell County on the Baltimore and Ohio Railroad.
- Ayers**; post village in Calhoun County.
- Back**; creek, a right-hand branch of the Potomac River in Berkeley County.
- Back**; creek, a small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Back**; creek, a small left-hand tributary to Second Creek, a branch of Greenbrier River, in Monroe County.
- Back Allegheny**; mountain at head of Shavers Fork of Cheat River in Randolph, Pocahontas, and Greenbrier counties.
- Backbone Knob**; summit in Logan County.
- Back Fork**; mountain in Webster and Randolph counties.
- Back Fork of Elk**; right-hand branch of Elk River in Webster and Randolph counties.
- Backus**; post village in Fayette County.
- Baden**; post village in Mason County.
- Badway**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

- Bailey**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Bailey**; branch, a very small right-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.
- Bailey**; branch, a very small right-hand tributary to Pocotaligo River, a branch of Kanawha River, in Putnam County.
- Baileysville**; post village in Wyoming County.
- Baker**; fork, a small left-hand branch of Elk Twomile Creek, a tributary to Elk River, in Kanawha County.
- Baker**; fork, a small left-hand tributary to Elk River in Braxton County.
- Baker**; post village in Hardy County on the Norfolk and Western Railway.
- Bakers**; run, a left-hand tributary to Lost River in Hardy County.
- Bakerton**; post village in Jefferson County on the Baltimore and Ohio Railroad.
- Balderson**; post village in Wood County.
- Bald Knob**; summit in Boone County.
- Bald Knob**; summit in Harris County. Elevation, 1,552 feet.
- Bald Knob**; summit in Lewis County.
- Bald Knob**; summit in the eastern part of Pocahontas County on the Virginia State line. Altitude, 4,242 feet.
- Baldknob**; post village in Boone County.
- Baldwin**; branch, a small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Baldwin**; post village in Gilmer County.
- Ball**; creek, a right-hand branch of Tanner Fork of Little Kanawha River in Gilmer County.
- Ball**; creek, a small left-hand branch of Charley Creek, a tributary to Mud River, in Cabell County.
- Ballard**; fork, a small left-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Ballard**; fork, a small right-hand tributary to Mud River, a branch of Guyandot River, in Boone County.
- Ballard**; post village in Monroe County.
- Ballengee**; post village in Summers County.
- Balls**; post village in Marshall County.
- Balser**; mountain, a summit in Pocahontas County.
- Baltimore**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Bancroft**; post village in Putnam County.
- Bank**; post village in Pendleton County.
- Bank Camp**; branch, a small right-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Bannen**; post village in Marshall County.
- Bannock Shoal**; run, a small right-hand tributary to Williams River in Webster and Pocahontas counties.
- Bans**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Barbecue**; fork, a left-hand branch of Grass Run in Gilmer County.
- Barbecue**; run, a small right-hand branch of Maul Creek in Braxton County.
- Barbour**; county, situated in the northern part of the State, in the Alleghany Plateau, here not greatly dissected; it is drained by tributaries to the Monongahela. Area, 393 square miles. Population, 14,198—white, 13,390; negro, 808; foreign born, 230. County seat, Philippi. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.

- Barboursville**; town in Cabell County on the Chesapeake and Ohio Railway.  
Altitude, 578 feet. Population, 429.
- Bardane**; post village in Jefferson County.
- Bargers Springs**; post village in Summers County.
- Barker**; creek, a left-hand tributary to Guyandot River in Wyoming County.
- Barker Ridge**; mountains in Wyoming County.
- Barn**; post village in Mercer County.
- Barn**; run, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Barnes Mills**; post village in Hampshire County.
- Barnett**; run, a right-hand branch of Wheeling Creek in Marshall County.
- Barns Creek**; right-hand branch of Mud River in Lincoln County.
- Barnum**; post village in Mineral County on the West Virginia Central and Pittsburgh Railway.
- Barrackville**; post village in Marion County on the Baltimore and Ohio Railroad.  
Altitude, 901 feet.
- Barren**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Barren**; creek, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Barren She**; creek, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Barren She**; mountain, a summit in Nicholas County. Elevation, 3,000 feet.
- Barren She**; run, a small right-hand tributary to North Fork of Cherry River in Nicholas County.
- Barren She**; run, a small left-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Bartholomew**; fork, a left-hand branch of Buffalo Creek in Marion County.
- Bartlett**; creek, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River in McDowell County.
- Bartley**; post village in Wyoming County.
- Barton Knob**; summit of Cheat Mountain in Randolph County.
- Bartram**; post village in Wayne County.
- Basin**; post village in Wyoming County.
- Basnett**; village in Marion County.
- Bat**; run, a left-hand tributary of Fish Creek in Wetzel County.
- Batoff**; creek, a small left-hand branch of Piney Creek, a tributary to New River, in Raleigh County.
- Battern**; fork, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Battle**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- Bauffman Knob**; summit between Elk and Gauley rivers in Webster County.
- Bayard**; town in Grant County on North Fork of Potomac River and on the West Virginia Central and Pittsburgh Railway. Population, 540. Altitude, 3,150 feet.
- Bayards Knob**; summit in Randolph County. Altitude, 4,150 feet.
- Bays**; fork, a small left-hand branch of Middle Fork of Davis Creek, tributary to Kanawha River, in Kanawha County.
- Bays**; post village in Fayette County.
- Beach**; fork, a right-hand branch of Twelvepole Creek in Wayne County.
- Beach Lick**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.
- Bealls Mills**; post village in Lewis County.
- Bean Camp**; creek, a small right-hand branch of Marrowbone Creek, a tributary to Tug Fork of Chattarawha River, in Logan County.

- Bear**; branch, a small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Bear**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Bear**; branch, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Bear**; branch, a small left-hand tributary to Horse Creek, a branch of Little Coal River, in Lincoln County.
- Bear**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Bear**; creek, a left-hand tributary to North Fork of Cherry River in Greenbrier County.
- Bear**; mountain, a summit near the eastern border of Pocahontas County.
- Bear**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Bear**; run, a small left-hand tributary to Elk River in Braxton County.
- Bear**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Bear**; run, a small right-hand tributary to Oil Creek in Lewis County.
- Bear**; run, a right-hand tributary to South Fork of Fishing Creek in Wetzel County.
- Bear Camp**; run, a small left-hand branch of Left Fork of Buckhannon River in Randolph and Upshur counties.
- Beard**; post village in Pocahontas County on the Chesapeake and Ohio Railway.
- Bearden Knob**; summit of Brown Mountain in Tucker County.
- Beards**; fork, a right-hand branch of Loop Creek, a tributary to Kanawha River in Fayette County.
- Bear Garden**; fork, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Bear Garden Knobs**; summits in Greenbrier County, one of which reaches an altitude of 3,262 feet.
- Bearhole**; fork, a small right-hand tributary to Guyandot River in Wyoming County.
- Bear Knob**; summit in Randolph County.
- Bear Pen**; branch, a small right-hand branch of Rock Camp Fork of Twentymile Creek, a tributary to Gauley River in Nicholas and Clay counties.
- Bear Run**; fork, a small right-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay and Nicholas counties.
- Bear Spring**; branch, a small left-hand tributary to Huff Creek, a branch of Guyandot River, in Wyoming County.
- Bearsville**; post village in Tyler County.
- Beartown**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Beartown**; fork, a small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Beartown Ridge**; mountains in Wyoming County.
- Bearwallow**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Bear Wallow**; branch, a small right-hand tributary to Dingus Run, a branch of Guyandot River, in Logan County.
- Bear Wallow**; hill in McDowell County. Altitude, 3,170 feet.
- Bear Wallow**; run, a small right-hand tributary to Back Fork of Elk River in Webster and Randolph counties.
- Bear Wallow Knob**; summit in Fayette County. Altitude, 2,460 feet.
- Bear Wallow Knob**; summit in Greenbrier County. Elevation, 4,030 feet.
- Bear Wallow Ridge**; mountains in Wyoming County.
- Beatrice**; post village in Ritchie County.
- Beatysville**; post village in Jackson County.

**Beauty**; post village in Fayette County.

**Beaver**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Beaver**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Beaver**; creek, a small right-hand tributary to Meadow River in Greenbrier County.

**Beaver**; creek, a right-hand branch of Black Water River in Tucker County.

**Beaver**; creek, a right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Beaver**; creek, a small right-hand tributary to Valley River in Randolph and Barbour counties.

**Beaver**; creek, a small left-hand tributary to Valley River in Randolph County.

**Beaver**; post village in Nicholas County on the Chesapeake and Ohio Railway.

**Beaver**; run, a small right-hand tributary to Holly River in Webster County.

**Beaver**; run, a small right-hand tributary to Patterson Creek, a branch of North Branch of Potomac River, in Mineral County.

**Beaver**; run, a small right-hand tributary to Gauley River in Webster County.

**Beaver Dam Ridge**; short spur of Black Mountain in Pocahontas County.

**Beaver Lick**; mountain, long narrow ridge, lying east of Greenbrier River in Greenbrier and Pocahontas counties. Elevation, 2,500 to 3,500 feet.

**Beaver Pond**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.

**Bebee**; post village in Wetzel County.

**Beccas**; creek, a small right-hand tributary to Valley River in Randolph County.

**Beckley**; county seat of Raleigh County. Population, 342. Altitude, 2,300 feet.

**Beckwith**; post village in Fayette County on Laurel Creek.

**Becky**; run, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.

**Bedington**; post village in Berkeley County on the Cumberland Valley Railroad.

**Bee**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Bee**; branch, a very small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Bee**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Bee**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.

**Bee**; run, a small left-hand tributary to Cranberry River in Webster and Nicholas counties.

**Bee**; run, a very small right-hand tributary to Elk River in Braxton County.

**Bee**; run, a left-hand branch of Cheat River in Preston County.

**Bee**; post village in Putnam County.

**Beech**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Beech**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.

**Beech**; creek, a small right-hand branch of Tug Fork of Chattarawha River, a tributary to Ohio River, in Logan County.

**Beech**; creek, a small left-hand branch of Spruce Fork of Little Coal River in Logan County.

**Beech**; fork, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas and Webster counties.

**Beech**; fork, a right-hand branch of Shaver Fork in Braxton County.



- Beech**; fork, a large right-hand tributary to Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Beech**; fork, a small right-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay and Nicholas counties.
- Beech**; mountain, a short spur from Rich Mountain in Randolph and Nicholas counties.
- Beech**; post village in Calhoun County.
- Beech**; run, a small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Beech**; run, a right-hand head fork of Left Fork of Buchannon River in Randolph County.
- Beechcreek**; post village in Mingo County on the Norfolk and Western Railway. Altitude, 1,019 feet.
- Beech Flat Knob**; summit in Randolph County.
- Beechgrove**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Beechhill**; post village in Mason County.
- Beech Knob**; summit in Greenbrier County. Altitude, 4,161 feet.
- Beech Lick**; run, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Beechwood**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Beechy**; branch, a small left-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Beechy**; fork, a small left-hand branch of Fuqua Creek, a tributary to Coal River, in Lincoln County.
- Bee Knob**; summit in Braxton County.
- Bee Knob**; summit in Greenbrier County.
- Bee Knob**; summit in Randolph County.
- Bee Knob**; summit in Webster County. Altitude, 3,280 feet.
- Beelers Station**; post village in Marshall County.
- Bee Lick Knob**; summit in Fayette County. Altitude, 3,118 feet.
- Bee Tree**; branch, a small left-hand tributary to Devils Fork, a branch of Guyan-dot River, in Raleigh County.
- Bee Tree**; run, a small left-hand tributary to Back Fork of Elk River in Randolph County.
- Bee Tree Ridge**; short spur from Frank Mountain in Pocahontas County.
- Behler**; post village in Monongalia County.
- Belcher**; branch, a very small right-hand tributary to Tug River in McDowell County.
- Belcher**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Belcher**; branch, a small left-hand tributary to Pinnacle Creek, a branch of Guyan-dot River, in Wyoming County.
- Belfont**; post village in Braxton County.
- Belgrove**; post village in Jackson County.
- Belington**; town in Barbour County on the Baltimore and Ohio, the Belington and Beaver Creek, the Roaring Creek and Belington, and the West Virginia Central and Pittsburg railroads. Population, 430.
- Bell**; creek, a right-hand branch of Twenty Mile Creek, a tributary to Gauley River, in Nicholas, Fayette, and Kanawha counties.
- Belle**; post village in Kanawha County.
- Belleville**; post village in Wood County on the Baltimore and Ohio Railroad.
- Bellton**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Belmont**; post village in Pleasants County on the Baltimore and Ohio Railroad.



**Belva**; post village in Nicholas County on the Chesapeake and Ohio Railway.

**Ben**; creek, a small right-hand branch of Tug Fork of Big Sandy River in Mingo County.

**Ben**; run, a small left-hand tributary to Indian Fork in Lewis County.

**Ben**; run, a small left-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.

**Ben**; run, a small right-hand tributary to Elk River in Braxton County.

**Bend**; branch, a very small right-hand tributary to Spruce Fork of Little Coal River in Logan County.

**Bend**; branch, a small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.

**Bender**; run, a small left-hand tributary to left fork of Steer Creek in Braxton County.

**Bendolph**; village in Marion County.

**Ben Lomond**; post village in Mason County on the Baltimore and Ohio Railroad.

**Bennett**; fork, a small indirect right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.

**Bennett**; post village in Gilmer County.

**Benson**; post village in Harrison County.

**Bent**; creek, a very small left-hand branch of Marrowbone Creek, a tributary to Tug Fork of Chattarawha River, in Logan County.

**Bent Mountain**; ridge in Mercer County.

**Bentons Ferry**; post village in Marion County on the Baltimore and Ohio Railroad. Altitude, 883 feet.

**Benwood**; city in Marshall County, on the Baltimore and Ohio and the Pittsburg, Cincinnati, Chicago and St. Louis railroads. Altitude, 645 feet. Population, 4,511.

**Berea**; post village in Ritchie County.

**Bergoo**; fork, a left-hand tributary to Elk River in Webster and Randolph counties.

**Bergoo**; post village in Webster County.

**Berkeley**; county situated in the northeastern part of the State, limited on the north by the Potomac; the surface consists in the main of a rolling valley traversed by Little North and Sleepy Creek mountains. Area, 257 square miles. Population, 19,469—white, 17,704; negro, 1,765; foreign born, 237. County seat, Martinsburg. The mean magnetic declination in 1900 was  $4^{\circ} 25'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Baltimore and Ohio and the Cumberland Valley railroads.

**Berkeley**; run, a left-hand branch of Tygart Valley River in Taylor County.

**Berkeley Springs**; county seat of Morgan County on the Baltimore and Ohio Railroad. Population, 781.

**Berlin**; post village in Lewis County.

**Bernards Town**; post village in Webster County.

**Bernie**; post village in Lincoln County.

**Berry**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Berry**; branch, a small left-hand tributary to Winding Gulf, a branch of Guyandot River in Raleigh County.

**Berry**; run, a left-hand tributary of Berkeley Run in Taylor County.

**Berryburg**; post village in Barbour County on the Baltimore and Ohio Railroad.

**Bert**; post village in Tyler County.

**Bethany**; village in Brooke County. Population, 245.

**Bethel**; post village in Mercer County.

**Betsy**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.

**Beury**; post village in Fayette County on the Chesapeake and Ohio Railway.

**Beverage Knob**; summit in Upshur County.

**Beverly**; town in Randolph County on the West Virginia Central and Pittsburg Railway. Altitude, 2,250 feet. Population, 464.

**Bias**; branch, a very small right-hand tributary to Spruce Fork of Little Coal River in Boone County.

**Bible Knob**; summit in Pendleton County.

**Bicketts Knob**; summit in Monroe County. Altitude, 3,327 feet.

**Bickle Knob**; summit in Randolph County. Altitude, 4,020 feet.

**Big**; branch, a small right-hand tributary to Cranberry River in Webster County.

**Big**; branch, a very small right-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Big**; branch, a very small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Big**; branch, a small right-hand tributary to Wide Mouth Creek, a branch of Blue-stone River, in Mercer County.

**Big**; branch, a very small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Big**; branch, a very small right-hand tributary to Guyandot River in Mingo County.

**Big**; branch, a small left-hand tributary to Spruce Fork of Little Coal River in Boone County.

**Big**; branch, a very small left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River in Lincoln County.

**Big**; branch, a small left-hand tributary to Lilly Fork of Buffalo Creek, a branch of Elk River, in Clay County.

**Big**; branch, a small left-hand tributary to Second Creek, a branch of Greenbrier River, in Monroe County.

**Big**; branch, a small left-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Big**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Big**; creek, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Lincoln County.

**Big**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Big**; creek, a left-hand branch of Trace Fork of Mud River in Lincoln and Putnam counties.

**Big**; creek, a left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Big**; creek, a very small right-hand tributary to Greenbrier River in Summers County.

**Big**; creek, a small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.

**Big**; creek, an indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Big**; creek, a small right-hand tributary to Gauley River, a branch of Kanawha River, in Fayette County.

**Big**; fork, a left-hand branch of Strange Creek in Braxton County.

**Big**; fork, a very small left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

**Big**; mountain, a short ridge between Laurel Creek and Little Laurel Creek in Nicholas County.

**Big**; mountain, a ridge west of South Branch of Potomac River in Pendleton County. Elevation, 2,000 to 2,500 feet.

**Big**; run, a left-hand tributary to North Fork of Potomac River in Pendleton County.

- Big**; run, a small left-hand tributary to Elk River in Webster and Randolph counties.
- Big**; run, a small indirect left-hand tributary to West Fork of Monongahela River in Lewis County.
- Big**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Big**; run, a left-hand tributary to Thorn Run, a branch of South Branch of Potomac River, in Pendleton County.
- Big**; run, a small left-hand tributary to Red Creek in Randolph County.
- Big**; run, a small left-hand tributary to Gauley River, entering it between Miller Ridge and Hamrick Ridge, in Webster County.
- Big**; run, a small left-hand tributary to Elk River in Webster County.
- Big**; run, a small left-hand tributary to Dry Fork of Cheat River in Tucker County.
- Big**; run, a small left-hand tributary to Spruce Run, a small branch of Cheat River, in Preston County.
- Big**; run, a small right-hand tributary to Shavers Fork of Cheat River in southeastern part of Randolph County.
- Big**; run, a small right-hand tributary to East Fork of Greenbrier River in Pocahontas County.
- Big**; run, a small right-hand branch of Laurel Fork, a tributary to Back Fork of Holly River, in Webster County.
- Big**; run, a right-hand tributary to North Fork of Fishing Creek in Wetzel County.
- Big**; run, a small right-hand tributary to Elk River in Webster County.
- Big**; run, a left-hand branch of Little Kanawha River in Gilmer County.
- Big**; run, a small right-hand tributary to Valley River in Randolph County.
- Big**; run, a left-hand branch of Pyles Creek in Marion County.
- Big**; run, a left-hand branch of Leading Creek in Gilmer County.
- Big**; run, a small right-hand tributary to South Branch of Potomac River in Hampshire County.
- Big**; run, a small right-hand tributary to Elk River in Braxton County.
- Bigbattle**; post village in Doddridge County.
- Big Beechy**; creek, a very small left-hand tributary to Elk River in Clay County.
- Big Beechy**; run, a small left-hand tributary to Williams River in Webster County.
- Bigbend**; post village in Calhoun County on the Chesapeake and Ohio Railway.
- Big Briery Knob**; summit in Nicholas County. Altitude, 3,738 feet.
- Big Buffalo**; creek, a small left-hand tributary to Elk River in Braxton County.
- Big Buffalo**; creek, a left-hand tributary to Cheat River in Preston County.
- Big Clear**; creek, a right-hand branch of Meadow River in Greenbrier County.
- Big Clear**; mountain, a curved range in Greenbrier County. Elevation, 3,000 to 4,000 feet.
- Big Clear Creek**; village in Greenbrier County.
- Big Coal**; river, a large, left-hand branch of Kanawha River.
- Big Cove**; run, a small right-hand tributary to Valley River in Barbour County.
- Big Cub**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Big Cub**; creek, a small right-hand tributary to Guyandot River in Wyoming County.
- Big Ditch**; run, a small right-hand tributary to Gauley River in Webster County.
- Big Draft**; small right-hand tributary to Anthonys Creek, a branch of Greenbrier River, in Greenbrier County.
- Big Elk**; run, a small left-hand tributary to Coal River, a branch of Kanawha River, in Raleigh County.
- Big Hart**; creek, a small left-hand branch of Guyandot River, a tributary to Ohio River, in Lincoln County.
- Big Hollow**; short right-hand tributary to Kanawha River in Kanawha County.

- Big Huff**; creek, a right-hand branch of Guyandotte River in Logan and Wyoming counties.
- Big Isaac**; post village in Doddridge County.
- Big Jarrell**; fork, a left-hand branch of Hopkins Fork, a tributary to Coal River, in Boone County.
- Big Jenny**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Big Jonathan**; run, a small left-hand tributary to Cheat River in Tucker County.
- Big Knob**; summit in Clay County.
- Big Knob**; summit in Greenbrier County.
- Big Knob**; summit in Kanawha County. Altitude, 1,487 feet.
- Big Laurel**; branch, a small right-hand tributary to Beaver Creek, a branch of Piney Creek, in Raleigh County.
- Big Laurel**; creek, a small left-hand tributary to Gauley River in Webster County.
- Big Laurel**; creek, a left-hand tributary to Cherry River, a branch of Gauley River, in Nicholas and Greenbrier counties.
- Big Laurel**; creek, a small right-hand branch of Kiah Fork of Twelvepole Creek in Wayne County.
- Big Laurel**; creek, a right-hand tributary to Elk River, a branch of Kanawha River, in Clay County.
- Big Laurel**; run, a left-hand tributary to Valley River in Randolph County.
- Big Laurel**; run, a small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Biglick**; branch, a very small left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Big Lynn**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Big Moses**; post village in Tyler County.
- Big Otter**; post village in Clay County.
- Big Paw Paw**; creek, left-hand branch of Monongahela River, in Mineral County.
- Big Ridge**; mountains in Raleigh County.
- Big Ridge**; broken mountainous range in Greenbrier County. Elevation, 2,500 to 3,000 feet.
- Big Ridge**; mountains in Wyoming County.
- Big Ridge**; short spur in Pocahontas County. Elevation, 2,500 to 3,000 feet.
- Big Ridge**; short spur in Hardy County. Elevation, 2,000 feet.
- Big Right**; fork, a small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Big Rock**; summit in Fayette County. Altitude, 2,538 feet.
- Big Rock**; summit in Peters Mountain in Monroe County.
- Big Rocky**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.
- Big Run**; gap in hills in Webster County.
- Big Sandy**; creek, a right-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Big Sandy**; post village in McDowell County.
- Big Sandy**; river, a large left-hand branch of Ohio River. It turns in the crest of the Alleghany Plateau and flows nearly northwest to its mouth at Catlettsburg, forming through most of its course the boundary line between West Virginia and Kentucky. Drainage area, 4,050 square miles. It is navigable the entire length. Sometimes called the Chatterawha.
- Big Sang Kill**; very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Big Sewell**; knob of Big Sewell Mountain in Fayette County.

- Big Sewell**; mountain, a short, curved ridge in Fayette County. Elevation, 3,000 to 3,500 feet.
- Big Spring**; fork, a right-hand head fork of Elk River in Pocahontas County.
- Bigsprings**; post village in Calhoun County.
- Big Spruce Knob**; summit in Pocahontas County. Altitude, 4,652 feet.
- Big Staunch**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Big Sulphur**; creek, a small right-hand branch of Big Ugly Creek, a tributary to Guyandot River, in Lincoln County.
- Big Sycamore**; creek, a left-hand tributary to Elk River in Clay County.
- Big Top**; summit in the central part of Pocahontas County.
- Big Twomile**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Big Ugly**; creek, a right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln and Boone counties.
- Big Whitestick**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Big Wolf Knob**; summit on boundary line between Lincoln and Logan counties.
- Bill**; branch, a very small right-hand tributary to Guyandot River in Wyoming and Logan counties.
- Bill**; creek, a small left-hand tributary to Kanawha River in Putnam County.
- Bill**; fork, a small right-hand tributary to O'Brien Fork in Braxton County.
- Billie**; branch, a very small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Bills**; creek, a small left-hand tributary to Sugar Creek, an indirect tributary to Valley River, in Barbour County.
- Billy**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Billy**; branch, a very small right-hand tributary to Middle Fork of Mud River in Lincoln County.
- Binola**; post village in Wood County.
- Birch**; fork, a right-hand tributary to Marsh Fork, a left-hand head fork of Coal River, in Raleigh County.
- Birch**; river, a left-hand branch of Elk River in Braxton and Nicholas counties.
- Birch Pen**; run, a small right-hand tributary to Laurel Fork of Holly River in Webster County.
- Birch River**; post village in Nicholas County.
- Birch Root**; run, a small left-hand branch of Big Buffalo Creek in Preston County.
- Bird**; post village in Tyler County.
- Bird**; run, a small left-hand tributary to Knapp Creek, a branch of Greenbrier River, in Pocahontas County.
- Bird Knob**; summit in Clay County. Altitude, 1,880 feet.
- Bishop**; branch, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Bishop Knob**; summit in Webster County.
- Bismarck**; post village in Grant County, situated along the Allegany Front. Altitude, 2,863 feet.
- Black**; fork, a small left-hand branch of Cabin Creek, a tributary to Guyandot River, in Wyoming County.
- Black**; mountain, a summit in Pocahontas County.
- Black**; run, a right-hand head fork of Laurel Fork of Cheat River in Randolph County.
- Black**; run, a small right-hand tributary to North Fork of Greenbrier River in Pocahontas County.

**Blackbird Knob**; summit in Tucker County.

**Blackburn**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.

**Black Lick**; creek, a small right-hand tributary to Bluestone River in Mercer County.

**Black Lick**; creek, a small right-hand tributary to Little Skin Creek in Lewis County.

**Black Oak**; mountain in Mercer County.

**Blacksville**; town in Monongalia on the Chesapeake and Ohio Railway. Population, 180.

**Black Water**; river, a right-hand branch of Dry Fork of Cheat River in Tucker County.

**Blaine**; island in Kanawha River, near Charleston in Kanawha County.

**Blaine**; post village in Mineral County on the West Virginia Central and Pittsburg Railway. Altitude, 1,689 feet.

**Blake**; branch, a left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.

**Blake**; creek, a small right-hand tributary to Kanawha River in Putnam and Kanawha counties.

**Blake**; fork, a left-hand branch of Lynn Camp Run in Wetzel County.

**Blaker Mills**; post village in Greenbrier County.

**Bland**; run, a right-hand branch of Church Fork of Fish Creek in Wetzel County.

**Blandville**; post village in Doddridge County.

**Blayne**; run, a left-hand tributary of Castleman Run in Ohio County.

**Blaze**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Raleigh and Fayette counties.

**Blaze**; fork, a small left-hand tributary to the right-hand head fork of Grassy Creek in Webster County.

**Blenn**; run, a left-hand branch of Little Fishing Creek in Wetzel County.

**Blennerhassett**; post village in Wood County on the Baltimore and Ohio Railroad.

**Bletcher**; branch, a left-hand branch of Mud River in Cabell County.

**Blizzard**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.

**Bloomery**; post village in Hampshire County. Altitude, 700 feet.

**Bloomington**; post village in Roane County.

**Blown Timber**; fork, a right-hand tributary to Crooked Fork in Braxton County.

**Blue**; creek, a left-hand tributary to Elk River in Kanawha and Clay counties.

**Blue**; post village in Tyler County.

**Bluecreek**; post village in Kanawha County on the Charleston, Clendennin and Sutton Railroad.

**Bluefield**; city in Mercer County on the Norfolk and Western Railway. Altitude, 2,557 feet. Population, 4,644.

**Blue Knob**; branch, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.

**Blue Knob**; creek, a small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.

**Blue Knob**; summit in Greenbrier County.

**Blue Knob**; summit in Lincoln County.

**Blue Knob**; summit in Pocahontas County. Altitude, 4,368 feet.

**Blue Knob**; summit in Randolph County.

**Blue Ridge**; mountains, the easternmost ridge of the Appalachian System, with the exception of a few short outliers. It extends from Maryland, southward to the southern boundary of the State. From Harpers Ferry, where it is cut through by the Potomac in a water gap, and where it has an altitude of from



1,000 to 1,200 feet, it runs southwestward, increasing rapidly in altitude until at Stony Man, near Luray, and the Peaks of Otter, near Lynchburg, it has an altitude of 4,000 feet. James and Roanoke rivers, which head in the valley behind the ridge, have cut deep gaps in it. In the southern part of the State it changes from a ridge to a plateau with an escarpment facing southeast, and in this form enters North Carolina.

**Blue Spring**; post village in Randolph County.

**Bluestone**; river, a left-hand branch of New River.

**Blue Sulphur Springs**; post village in Greenbrier County on the Chesapeake and Ohio Railway. Altitude, 598 feet.

**Bluff**; fork, a small left-hand branch of Devils Fork, a tributary to Guyandot River, in Raleigh County.

**Bluff**; post village in Mercer County.

**Blundon**; post village in Kanawha County.

**Board**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Board**; post village in Mason County.

**Board Tree**; branch, a very small left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.

**Board Tree**; branch, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.

**Board Tree**; gap in Nicholas County, caused by Board Tree Branch in Nicholas County.

**Board Tree**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Boar Knob**; summit in Braxton County. Elevation, 1,466 feet.

**Boaz**; post village in Wood County.

**Bob**; run, a small left-hand tributary to Elk River in Webster County.

**Bobby**; creek, a small right-hand branch of Big Ugly Creek, a tributary to Guyandot River, in Lincoln County.

**Bob Peak**; summit in the central part of Upshur County.

**Bob Ross**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Bobs Ridge**; short spur between Greenbrier and Alleghany mountains in Greenbrier County. Elevation, 2,000 to 2,500 feet.

**Boggs**; fork, a small left-hand tributary to Lower Sleith Fork in Braxton County.

**Boggs**; post village in Webster County on the Baltimore and Ohio Railroad.

**Boggs**; run, a left-hand tributary to Spring Creek, a branch of Greenbrier River, in Greenbrier County.

**Boggs**; run, a left-hand branch of Ohio River in Marshall County.

**Boggs Knob**; summit in Greenbrier County.

**Boggs Knob**; summit in Fayette County. Altitude, 3,600 feet.

**Bois**; post village in Webster County.

**Bolair**; post village in Webster County.

**Bolivar**; town in Jefferson County. Population, 781.

**Bond**; creek, a small left-hand tributary to Ohio River in Ritchie County.

**Bone Town**; gap at mouth of Robinson Creek at its junction with Buffalo Creek, in Clay County.

**Booher**; post village in Tyler County.

**Boomer**; branch, a very small right-hand tributary to Kanawha River, in Fayette County.

**Boomer**; post village in Fayette County on the Ohio Central Lines.

**Boone**; county, situated in the southern part of the State, on the Allegheny Plateau. It is here deeply dissected. It is drained by Coal and Little Coal rivers. Area, 512 square miles. Population, 8,194—white, 8,059; negro, 135; foreign born, 7.

County seat, Madison. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.

**Boone**; post village in Fayette County.

**Booths**; creek, a right-hand branch of West Fork River in Marion County.

**Boothsville**; post village in Marion County.

**Booton**; branch, a small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Booton**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Boreman**; post village in Wood County.

**Borland**; post village in Pleasants County.

**Botkins Ridge**; spur in Pendleton County.

**Bottom**; creek, a small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River in McDowell County.

**Bowen**; creek, a right-hand branch of Beech Fork of Twelvepole Creek in Wayne County.

**Bowen**; post village in Wayne County.

**Bowers**; creek, a small right-hand branch of Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Bowlby**; post village in Monongalia County.

**Box**; post village in Pendleton County.

**Boyd**; branch, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Boyd**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Boyer**; fork, a small right-hand branch of Piney Creek, a tributary to New River, in Raleigh County.

**Boyer**; post village in Pocahontas County.

**Boyer**; run, a small right-hand tributary to Cedar Creek in Braxton County.

**Brackin**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.

**Bradford**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Bradford**; post village in Randolph County.

**Bradshaw**; creek, a left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River in McDowell County.

**Bradshaw**; creek, a small right-hand branch of Indian Creek, a tributary to New River, in Summers County.

**Bradshaw**; post village in McDowell County, situated on Bradshaw Creek.

**Bradshaw Hill**; a knob of Gauley Mountain in Randolph County.

**Brady**; fork, a left-hand branch of Grass Lick and tributary to Left Fork of Steer Creek in Braxton County.

**Brady**; post village in Pocahontas County.

**Bragg**; branch, a small right-hand tributary to Tommy Creek, a head fork of Guyandot River, in Raleigh County.

**Bragg**; fork, a small right-hand branch of Horse Creek, a tributary to Little Coal River, in Boone County.

**Bragg Knob**; summit in Clay County. Elevation, 1,674 feet.

**Braines**; creek, a right-hand branch of Raccoon Creek, a tributary to Valley River, in Preston County.

**Brake**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.



- Bramwell**; town in Mercer County on the Norfolk and Western Railway and on Bluestone River. Altitude, 2,247 feet. Population, 825.
- Branch**; mountain, a short ridge in Hardy County. Elevation, 1,500 to 2,500 feet.
- Branch**; post village in Pendleton County.
- Brandonville**; town in Preston County. Population, 68.
- Brandywine**; post village in Pendleton County.
- Brant**; creek, a very small right-hand tributary to Peters Creek, a branch of Gauley River, in Nicholas County.
- Braxton**; county, situated in the central part of the State on the Allegheny Plateau. It is here deeply dissected. It is traversed and drained by Little Kanawha and Elk rivers. Area, 541 square miles. Population, 18,904—white, 18,717; negro, 187; foreign born, 53. County seat, Sutton. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Breeding**; post village in Mingo County.
- Breckenridge**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Breeden**; creek, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Bridge**; branch, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Bridgeport**; town in Harrison County on the Baltimore and Ohio Railroad. Altitude, 979 feet. Population, 464.
- Brier**; creek, a left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Brier**; creek, a right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Brier**; post village in Wyoming County.
- Brier Patch**; mountain, a peak in the Allegheny Mountains in Randolph County. Altitude, 4,480 feet.
- Briery**; run, a small right-hand tributary to South Fork of Cherry River in Greenbrier County.
- Briery Knob**; summit in Nicholas County. Altitude, 1,850 feet.
- Briery Knob**; summit in Pocahontas County. Elevation, 4,534 feet.
- Brierylick**; run, a right-hand tributary of Right Fork of Steer Creek in Gilmer County.
- Briery Ridge**; short spur in Webster County, north of Gauley River.
- Brighton**; post village in Mason County.
- Brillian**; post village in Putnam County.
- Brink**; post village in Marion County.
- Briscoe**; post village in Wood County.
- Bristol**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Brittain**; post village in Taylor County.
- Broad**; branch, a small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.
- Broad**; run, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Broad**; run, a small right-hand branch of Wolf Creek, a tributary to Greenbrier River, in Monroe County.
- Brock**; run, a small right-hand branch of Holly River, a tributary to Elk River, in Braxton County.
- Brook**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Brook**; creek, a left-hand tributary to Laurel Creek in Webster County.

**Brook**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Randolph County.

**Brooke**; county, situated in the northern part of the State, in the Panhandle, bordering on Ohio River. Area, 97 square miles. Population, 7,219—white, 7,079; negro, 139, foreign born, 335. County seat, Wellsburg. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Pittsburg, Cincinnati, Chicago and St. Louis Railway.

**Brooklin**; town in Raleigh County on the Chesapeake and Ohio Railway. Population, 632.

**Brooks**; branch, a very small right-hand tributary to New River in Summers County.

**Brooks**; post village in Summers County on the Chesapeake and Ohio Railway.

**Brooks**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.

**Brookside**; post village in Preston County.

**Broom**; branch, a small left-hand branch of Alum Creek, a tributary to Coal River, in Kanawha County.

**Broomfield**; post village in Marion County.

**Brosius**; post village in Morgan County.

**Brown**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Brown**; creek, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.

**Brown**; mountain, a broken mountainous country in Tucker County. Elevation, 3,500 feet.

**Brown**; post village in Harrison County on the Baltimore and Ohio Railroad.

**Brown**; run, a left-hand tributary to North Fork of Dunkard Creek in Monongalia County.

**Brown**; run, a right-hand branch of Fish Creek in Wetzel County.

**Browning**; fork, a left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

**Browns**; branch, a very small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.

**Browns**; branch, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.

**Browns**; creek, a small right-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.

**Browns**; creek, a left-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.

**Browns**; knob in Taylor County.

**Browns**; mountain, a ridge in Pocahontas County between Browns and Knapp creeks. Elevation, 2,500 to 3,000 feet.

**Browns**; run, a left-hand tributary to the Ohio River in Marshall County.

**Browns**; run, a right-hand tributary to Little Wheeling Creek in Ohio County.

**Bruce**; village in Nicholas County.

**Bruceton Mills**; town in Preston County. Population, 80.

**Bruffs**; fork, a head fork of Big Sandy Creek in Preston and Barbour counties.

**Brush**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.

**Brush**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

- Brush**; creek, a right-hand tributary to Bluestone River in Mercer County. It rises in Stony Ridge.
- Brush**; creek, a small right-hand tributary to New River in Monroe County.
- Brush**; fork, a small left-hand tributary to Buckhannon River in Upshur County.
- Brush**; fork, a small left-hand tributary to Cedar Creek in Gilmer and Braxton counties.
- Brush**; run, a very small right-hand branch of Cedar Creek in Braxton County.
- Brush**; run, a right-hand branch of Indian Fork in Lewis County.
- Brush**; run, a right-hand branch of Lost Run in Taylor County.
- Brush**; run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Brush**; run, a right-hand branch of Buffalo Creek in Marion County.
- Brush**; run, a left-hand branch of Fishing Creek in Wetzel County.
- Brush Camp Low Place**; gap at the head of Leatherwood Fork, a left-hand branch of Elk River, in Randolph County.
- Brush Fence**; run, a small right-hand tributary to Gauley River in Webster County.
- Brushfork**; post village in Mercer County.
- Brushy**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Brushy**; branch, a very small left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Brushy**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Brushy**; creek, a small right-hand tributary to Seneca, a branch of North Fork of Potomac River, in Pendleton County.
- Brushy**; fork, a small left-hand branch of Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Brushy**; fork, a small left-hand branch of Peters Cave Fork of Horse Creek, a tributary to Little Coal River, in Lincoln County.
- Brushy**; fork, a left-hand tributary to Strange Creek in Nicholas County.
- Brushy**; fork, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Brushy**; fork, a small right-hand tributary to Teter Creek, a branch of Valley River, in Barbour County. It rises in Laurel Hills.
- Brushy**; fork, a small right-hand tributary to Bluestone River in Mercer County.
- Brushy**; fork, a small right-hand tributary to Elk River in Braxton County.
- Brushy**; fork, a right-hand branch of Dunkard Creek in Monongalia County.
- Brushy**; fork, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Brushy**; mountain, a short ridge in Greenbrier and Pocahontas counties. Elevation, 3,000 feet.
- Brushy**; run, a left-hand branch of Lunice Creek, tributary to South Branch of Potomac River, in Grant County.
- Brushy**; run, a name applied to the upper course of North Mill Creek, a right-hand tributary to South Branch of Potomac River, in Pendleton and Grant counties.
- Brushy Flat**; spur from Big Knob in Greenbrier County.
- Brushfork**; post village in Mercer County.
- Brushy Knob**; summit in Lincoln County.
- Brushy Knobs**; summit in Preston County.
- Brushy Meadow**; creek, an indirect right-hand tributary to Gauley River in Nicholas and Greenbrier counties.
- Brushy Ridge**; short, narrow range in Greenbrier County. Elevation, 2,500 feet.
- Brushyrun**; post village in Pendleton County.

**Bryan**; post village in Mason County.

**Buck**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Buck**; fork, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Logan County.

**Buck**; fork, a right-hand head fork of Sand Creek, a tributary to Guyandot River, in Lincoln County.

**Buck**; fork, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Buck**; mountain, a short ridge in Hardy County.

**Buck**; post village in Summers County.

**Buck**; run, a very small right-hand tributary to Elk River in Braxton County.

**Buck**; run, a right-hand tributary to Right Fork of Simpson Run in Taylor County.

**Buck**; run, a right-hand tributary to South Fork of Fishing Creek in Wetzel County.

**Buckeye**; branch, a very small left-hand tributary to Gauley River in Webster County.

**Buckeye**; creek, a small left-hand tributary to Elk River in Braxton County.

**Buckeye**; fork, a head fork of Little Skin Creek in Lewis County.

**Buckeye**; post village in Pocahontas County on the Chesapeake and Ohio Railway.

**Buck Garden**; branch, a small right-hand tributary to Peter Creek, a branch of Gauley River, in Nicholas County.

**Buckhannon**; county seat of Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,500 feet. Population, 1,589.

**Buckhannon**; mountain, a broken, mountainous ridge in the western part of Lewis County.

**Buckhannon**; river, a large left-hand branch of Tygarts Valley River in Upshur, Barbour, and Randolph counties.

**Buckhorn**; fork, a left-hand branch of Little Sycamore Creek, a tributary to Elk River in Clay County.

**Buckhorn**; post village in Preston County.

**Buck Knob**; summit in Greenbrier County.

**Buck Knob**; summit in Pocahontas County. Altitude, 4,356 feet.

**Buckles**; branch, a small right-hand tributary to Twenty Mile Creek, a branch of Gauley River, in Fayette County.

**Buckley**; mountain, a short ridge east of Greenbrier River in Pocahontas County. Elevation, 3,000 feet.

**Buck Lick**; small right-hand tributary to Gauley River, a large branch of Kanawha River, in Nicholas County.

**Buck Lick**; run, a left-hand tributary to Spruce Run, a small branch of Cheat River, in Preston County.

**Buena**; post village in Tucker County.

**Buffalo**; creek, a very small left-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.

**Buffalo**; creek, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.

**Buffalo**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Buffalo**; creek, a right-hand branch of Guyandot River in Logan County.

**Buffalo**; creek, a very small right-hand tributary to New River in Fayette and Summers counties.

**Buffalo**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River in Logan County.

**Buffalo**; creek, a small right-hand tributary to North Branch of Potomac River in Grant County.

**Buffalo**; creek, a left-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.

- Buffalo**; creek, a right-hand branch of Little Kanawha River in Braxton County.
- Buffalo**; creek, a small left-hand branch of Ohio River, rising in Pennsylvania and flowing west through Brooke County into Ohio River.
- Buffalo**; fork, a left-hand tributary to East Fork of Greenbrier River in Pocahontas County.
- Buffalo**; fork, a right-hand branch of Smithers Creek, a tributary to Kanawha River, in Kanawha County.
- Buffalo**; fork, a small right-hand branch of Hughes Creek, a tributary to Kanawha River, in Kanawha County.
- Buffalo**; fork, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Buffalo**; run, a left-hand branch of Right Fork of Middle Fork of Little Kanawha River in Webster County.
- Buffalo**; run, a small left-hand branch of Deer Creek, a tributary to North Fork of Greenbrier River, in Pocahontas County.
- Buffalo**; run, a small right-hand tributary to Cheat River in Preston County.
- Buffalo**; run, a left-hand branch of South Fork of Fishing Creek in Wetzel County.
- Buffalo**; village in Putnam County on the Ohio Central Lines. Population, 364.
- Buffalo Bull Knob**; summit in Webster County.
- Buffalo Hills**; short ridge west of South Branch of Potomac River in Pendleton County. Elevation, 2,000 to 2,500 feet.
- Buffalolick**; post village in Roane County.
- Buffalo Lick**; very small left-hand tributary to Elk River in Kanawha County.
- Buffalo Ridge**; summit in Marthas Ridge in Pocahontas County.
- Buffington**; run, a right-hand branch of Cheat River in Preston County.
- Bufs**; branch, a left-hand branch of Hurricane Creek, a tributary to Kanawha River, in Putnam County.
- Bula**; post village in Monongalia County.
- Bull**; creek, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Bull**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Bull**; creek, a small left-hand tributary to Ohio River in Wood County.
- Bull**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Bull**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne County.
- Bull**; run, a left-hand branch of Cheat River in Preston County.
- Bull**; run, a left-hand branch of Wheeling Creek in Marshall County.
- Bull**; run; a left-hand branch of French Creek in Upshur County.
- Bull**; run, a small left-hand tributary to Cheat River in Tucker County.
- Bull**; run, a right-hand tributary to Cedar Creek in Gilmer County.
- Bull Fork**; run, a left-hand branch of Little Kanawha River in Braxton County.
- Bull Lick**; branch, a small right-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Bullrun**; post village in Preston County.
- Bullskin**; branch, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Bulltown**; post village in Braxton County.
- Bumble Bee**; run, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.
- Bungers**; post village in Greenbrier County.
- Bunkerhill**; post village in Berkeley County on the Cumberland Valley Railroad.

**Bunners**; post village in Marion County.

**Burch**; post village in Mingo County.

**Burchfield**; post village in Wetzel County.

**Burdett**; post village in Putnam County.

**Burditt**; creek, a small right-hand tributary to Gauley River in Greenbrier County.

**Burk**; creek, a very small right-hand tributary to Elkhorn Creek in McDowell County.

**Burker**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.

**Burkes**; creek, a very small left-hand tributary to Elk River in Kanawha County.

**Burlington**; post village in Mineral County. Altitude, 800 feet.

**Burner**; mountain, a short ridge at the head of Greenbrier River in Pocahontas County.

**Burner**; run, a left-hand branch of Fish Creek in Wetzel County.

**Burning Rock**; triangulation station in Wyoming County.

**Burning Spring**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.

**Burning Springs**; post village in Wirt County.

**Burns**; run, a small left-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.

**Burnside**; branch, a very small tributary of Coal River, in Boone County.

**Burnsville**; post village in Braxton County on the Baltimore and Ohio Railroad. Altitude, 758 feet.

**Burnt**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Raleigh County.

**Burnt Bottom**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.

**Burnt Cabin**; branch, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.

**Burnt Cabin**; run, a right-hand branch of Tygart Valley River in Marion County.

**Burnt Camp**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.

**Burnthouse**; post village in Ritchie County.

**Burnt Ridge**; mountains in Raleigh County.

**Burnt Ridge**; short ridge between the heads of Greenbrier and North Fork of Pocahontas River in Pocahontas County.

**Burton**; post village in Wetzel County on the Baltimore and Ohio Railroad. Altitude, 1,060 feet.

**Bush**; run, a small right-hand tributary to French Creek in Upshur County.

**Buster Knob**; summit in Fayette County.

**Butcher**; branch a small left-hand tributary to New River in Fayette County.

**Butcher**; fork, a left-hand branch of Sand Fork in Gilmer and Lewis counties.

**Butcher**; run, a small left-hand tributary to Cedar Creek in Gilmer and Braxton counties.

**Butcher**; run, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.

**Butler**; post village in Mason County.

**Buzzard**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Buzzard**; branch, a small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.

**Buzzard**; creek, a left-hand branch of Trace Creek in Putnam County.

**Buzzard**; run, a left-hand branch of Cheat River in Monongalia County.

**Byrne**; post village in Braxton County.



**Byrnside**; post village in Putnam County.

**Cabell**; county, situated in the western part of the State bordering on Ohio River, which, with the Guyandot, drains it. Its surface is broken, being upon the lower slopes of the plateau. Area, 261 square miles. Population, 29,252—white, 27,713; negro, 1,537; foreign born, 378; county seat, Huntington. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Chesapeake and Ohio and the Ohio River railroads.

**Cabell**; creek, a right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Cabell**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Cabin**; branch, a very small right-hand tributary to Laurel Branch, a branch of Clear Fork of Guyandot River, in Wyoming County.

**Cabin**; creek, a small right-hand tributary to Guyandot River in Wyoming County.

**Cabin**; creek, a left-hand branch of Kanawha River in Kanawha and Fayette counties.

**Cabin**; fork, a small indirect right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.

**Cabin**; run, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Mineral County.

**Cabin**; run, a small left-hand branch of Right Fork of Holly River in Braxton County.

**Cacapehon**; post village in Hampshire County.

**Cacapon**; mountains, a short ridge in Hampshire and Morgan counties. Elevation, 2,500 feet.

**Cacapon**; river, a large right-hand branch of Potomac River, rising in Hardy County, and flowing in a generally northeastern direction through Hardy, Hampshire, and Morgan counties. In its upper course it is known as Lost River.

**Cairo**; town in Ritchie County on the Baltimore and Ohio and on the Cairo and Kanawha Valley railroads. Altitude, 658 feet. Population, 653.

**Calcutta**; post village in Pleasants County.

**Calders Peak**; one of the summits of Swoopes Knobs in Monroe County.

**Caldwell**; post village and railway station in Greenbrier County, located on Howards Creek; also on Chesapeake and Ohio Railway. Altitude, 1,766 feet.

**Caldwell**; run, a left-hand branch of Saltlick Creek in Braxton County.

**Calf**; run, a left-hand branch of Indian Fork of Ellis Creek in Lewis County.

**Calhoun**; county, situated in the western part of the State on the Alleghany Plateau. Area, 276 square miles; population, 10,266—white, 10,183; negro, 83; foreign born, 26. County seat, Grantsville. The mean magnetic declination in 1900 was 1° 10'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°.

**Calhoun**; post village in Barbour County.

**Calis**; post village in Marshall County.

**Calvin**; post village in Nicholas County.

**Camden**; post village in Lewis County on the Ohio River Railroad.

**Camden on Gauley**; post village in Webster County on the Baltimore and Ohio Railroad.

**Cameron**; town in Marshall County on the Baltimore and Ohio Railroad. Altitude, 547 feet. Population, 964.

**Camp**; branch, a very small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.



- Camp**; branch, a very small right-hand tributary to Dingus Run, a branch of Guyandot River, in Logan County.
- Camp**; branch, a small right-hand tributary to Tug River in McDowell County.
- Camp**; branch, a very small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Camp**; branch, a right-hand tributary of Beech Fork of Twelve Pole Creek in Cabell County.
- Camp**; creek, a very small left-hand tributary to Elk River in Clay County.
- Camp**; creek, a left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Camp**; creek, a right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Camp**; creek, a small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Camp**; creek, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Camp**; creek, a right-hand tributary to Laurel Creek in Braxton and Webster counties.
- Camp**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne County.
- Camp**; run, a left-hand branch of North Fork of Dunkard Creek in Monongalia County.
- Camp**; run, a right-hand tributary of Buffalo Creek in Marion County.
- Camp**; run, a left-hand tributary of Fishing Creek in Wetzel County.
- Camp**; post village in Doddridge County.
- Campbell**; creek, a right-hand tributary to Kanawha River in Kanawha County.
- Campbell**; fork, a small left-hand branch of Bell Creek, a tributary to Gauley River, in Kanawha County.
- Campbell**; run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Campbell**; post village in Calhoun County.
- Campcreek**; post village in Mercer County on Camp Creek.
- Campus**; post village in Wyoming County.
- Canaan**; mountain, a broken, mountainous country in Tucker and Grant counties. Elevation, 3,500 to 4,000 feet.
- Canaan**; post village in Upshur County.
- Cane**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Cane**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Cane**; fork, a small left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.
- Cane**; fork, a small right-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Canebrake**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Canfield**; post village in Braxton County.
- Cannel Coal Hollow**; short left-hand tributary to Elk River in Clay County.
- Cannelton**; post village in Kanawha County on the Ohio Central Lines. Altitude, 639 feet.
- Cannoy**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Canoe**; run, a left-hand tributary to Monongahela River in Lewis County.
- Canoe**; run, a very small right-hand tributary to Elk River in Braxton County.
- Cansada**; post village in Clay County.

**Canterbury**; post village in Mingo County, on the Norfolk and Western Railway.  
**Cantikee**; branch, a very small right-hand tributary to Guyandot River in Mingo County.

**Canton**; village in Marion County.

**Cantwell**; post village in Ritchie County.

**Capehart**; post village in Mason County.

**Caperton**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 990 feet.

**Capon Bridge**; post village in Hampshire County, located on Cacapon River.

**Capon Iron Works**; post village in Hardy County.

**Capon Springs**; post village in Hampshire County.

**Captina**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Carberry**; run, a right-hand tributary of Buffalo Creek in Marion County.

**Carbondale**; post village in Fayette County.

**Carder**; run, a right-hand branch of Lost Run in Taylor County.

**Carder**; run, a left-hand branch of Husted Creek in Taylor County.

**Caress**; post village in Braxton County.

**Carkin**; post village in Kanawha County.

**Carmel**; post village in Preston County.

**Carnes Knob**; summit in Clay County.

**Caro**; fork, a small left-hand tributary to Joe Creek, a branch of Coal River, in Boone County.

**Carpenter**; creek, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe and Greenbrier counties.

**Carpenter**; fork, a small left-hand tributary to Little Birch River in Braxton County.

**Carpenter**; run, a left-hand branch of Little Fishing Creek in Wetzel County.

**Carrel**; post village in Wayne County.

**Carron Knob**; summit in Nicholas County. Altitude, 2,382 feet.

**Carrson**; fork, a right-hand tributary of North Fork of Fishing Creek in Wetzel County.

**Carter**; branch, a small right-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.

**Carter**; run, a right-hand branch of Wheeling Creek in Ohio County.

**Carthage**; post village in Jackson County.

**Cartwright**; branch, a small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.

**Cascade**; run, a right-hand branch of Buffalo Creek in Brooke County.

**Cascara**; post village in Doddridge County.

**Casey**; creek, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.

**Cashmere**; post village in Monroe County.

**Cass**; post village in Pocahontas County on the Chesapeake and Ohio Railway.

**Cassiday**; fork a small left-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Cassity**; post village in Randolph County.

**Cassville**; post village in Monongalia County.

**Castle**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.

**Castle**; mountain, a ridge situated between South and North branches of Potomac River in Pendleton County. Elevation, 3,000 feet.

**Castle**; post village in Wyoming County.

**Castleman**; run, a left-hand branch of Buffalo Creek in Ohio and Brooke counties.

**Catawba**; post village in Marion County on the Baltimore and Ohio Railroad.

- Cave**; mountain on West and South branches of Potomac River in Pendleton and Grant counties. Elevation, 1,500 to 3,000 feet.
- Cave**; run, a small left-hand tributary to Little Kanawha River in Upshur County.
- Cave**; post village in Pendleton County.
- Cavill**; creek, a right-hand branch of Guyandot River in Cabell County.
- Cecil**; post village in Taylor County on the Baltimore and Ohio Railroad.
- Cedar**; branch, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Cedar**; branch, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Cedar**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Cedar**; branch, a very small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Cedar**; branch, a very small right-hand tributary to New River in Summers County.
- Cedar**; creek, a very small right-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Cedar**; creek, a small left-hand branch of Slab Fork, a tributary to Guyandot River in Wyoming County.
- Cedar**; creek, a large left-hand branch of Little Kanawha River in Gilmer and Braxton counties.
- Cedar**; run, a small right-hand tributary to Wolf Creek, a branch of Greenbrier River, in Monroe County.
- Cedarburg**; post village in Wyoming County.
- Cedarcliff**; post village in Mineral County.
- Cedargrove**; post village in Kanawha County.
- Cedar Knob**; summit in Pendleton County.
- Cedarville**; post village in Gilmer County, located on Cedar Creek.
- Centennial**; post village in Monroe County.
- Center**; post village in Monongalia County.
- Centerpoint**; post village in Doddridge County.
- Centerville**; town in Wayne County. Population, 156.
- Central City**; town in Cabell County on the Baltimore and Ohio and the Chesapeake and Ohio railroads. Population, 1,580.
- Centralia**; post village in Braxton County on the Baltimore and Ohio Railroad.
- Central Station**; post village in Doddridge County.
- Century**; post village in Barbour County on the Baltimore and Ohio Railroad.
- Ceredo**; village in Wayne County on the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western railroads. Altitude, 545 feet. Population, 1,279.
- Chandler**; branch, a small left-hand branch of Twomile Creek, a tributary to Kanawha River, in Kanawha County.
- Channel**; run, a small right-hand tributary to Valley River in Randolph County.
- Chap**; post village in Boone County.
- Chapel**; post village in Braxton County.
- Chapmanville**; post village in Logan County.
- Chappel**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Charles Knob**; summit in Grant County.
- Charleston**; capital of the State and county seat of Kanawha County on the Charleston, Clendennin and Sutton, the Chesapeake and Ohio, and the Ohio Central railroads. Altitude, 600 feet. Population, 1,099.
- Charlestown**; county seat of Jefferson County on the Baltimore and Ohio and Norfolk and Western railroads. Altitude, 514 feet. Population, 2,392.

- Charley**; branch, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Charley**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell and Putnam counties.
- Charley Ridge**; summit in Pocahontas County.
- Charlotte**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Charlotte**; post village in Monongalia County.
- Cheat**; mountain, a short ridge in the northern part of Pocahontas County. Elevation, 4,000 feet.
- Cheat**; river, a large eastern branch of the Monongahela. It drains the eastern part of the State through a number of branches and flows generally northward to its mouth near the north boundary of the State.
- Cheatbridge**; post village in Randolph County.
- Cheat View**; summit in Monongalia County. Elevation, 2,212 feet.
- Chelyan**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Chenowith**; creek, a small right-hand tributary to Valley River in Randolph County. It rises in Chenowith Knob of Cheat Mountain.
- Chenowith Knob**; summit in Randolph County. Altitude, 3,870 feet.
- Cherry**; fork, a small right-hand tributary to Little Kanawha River in Upshur and Lewis counties.
- Cherry**; post village in Wirt County.
- Cherry**; river, a large left-hand branch of Gauley River which rises in two forks, North and South, in Greenbrier County, and flows northwestward into Nicholas County to its junction with the Gauley.
- Cherry**; run, a right-hand tributary of Potomac River on the boundary between Morgan and Berkeley counties.
- Cherry Glades**; marsh at the head of Cherry River in Greenbrier and Pocahontas counties.
- Cherry Pond**; mountain in Boone and Raleigh counties.
- Cherryrun**; post village in Morgan County on the Baltimore and Ohio and the Western Maryland railroads.
- Chesterville**; post village in Wood County.
- Chestnut**; post village in Mason County.
- Chestnut**; run, a left-hand branch of Leading Creek in Gilmer County.
- Chestnut Bottom**; run, a right-hand tributary of Ellis Creek in Gilmer County.
- Chestnut Knob**; branch, a very small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Chestnut Lick**; small left-hand branch of Left Fork of Steer Creek in Gilmer County.
- Chestnut Ridge**; short spur in Greenbrier County. Elevation, 2,500 to 3,000 feet.
- Chestnut Ridge**; short spur in Pocahontas County.
- Chestnut Ridge**; short spur in Monongalia and Preston counties. Elevation, 2,275 feet.
- Chew**; run, a small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Chicken**; run, a right-hand tributary of Right Fork of Simpson Creek in Taylor County.
- Chiefton**; post village in Marion County.
- Childress**; branch, a left-hand tributary of Buch Fork of Twelve Pole Creek in Wayne County.
- Childs**; post village in Wetzel County.
- Chilton**; post village in Kanawha County on the Kanawha and Coal River Railway.
- Chimney Ridge**; mountains in Monroe County.

**Chimney Rock**; run, a small left-hand tributary to Elk River in Randolph County.  
**Chrisley**, fork, a small right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.

**Christian**; fork, a small right-hand tributary to Brush Creek, a branch of Bluestone River, in Mercer County.

**Christian**; post village in Logan County.

**Christopher**; run, a right-hand branch of Cheat River in Monongalia County.

**Chub**; fork, a small right-hand branch of Naul Creek in Braxton County.

**Church**; fork, a right-hand branch of Fish Creek in Wetzel County.

**Church Knob**; summit in Upshur County.

**Churchville**; post village in Lewis County.

**Cicerone**; post village in Roane County.

**Circleville**; post village in Pendleton County.

**Cirtsville**; post village in Raleigh County. Altitude, 1,640 feet.

**Cisko**; post village in Ritchie County.

**Clapboard**; run, a small left-hand tributary to Valley River in Randolph County.

**Claremont**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River.

**Clarence**; post village in Roane County.

**Claria**; post village in Calhoun County.

**Clark**; branch, a very small right-hand tributary to Elkhorn Creek in McDowell County.

**Clark**; gap in Great Flat Top Mountain in Mercer County.

**Clarksburg**; county seat of Harrison County on the Baltimore and Ohio Railroad. Population, 4,050. Altitude, 1,031 feet.

**Claude**; post village in Taylor County.

**Clawson**; post village in Pocahontas County.

**Clay**; branch, a head fork of Big Cub Creek, a tributary to Guyandot River, in Wyoming County.

**Clay**; county, situated in the central part of the State, in the Alleghany Plateau; it is here deeply dissected. It is drained mainly by Elk River. Area, 348 square miles. Population, 8,248—white, 8,230; negro, 18; foreign born, 48. County seat, Clay. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Charleston, Clendennin and Sutton Railroad.

**Clay**; county seat of Clay County.

**Clayton**; post village in Summers County.

**Clear**; fork, a left-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Clear**; fork, a right-hand branch of Guyandot River in Wyoming County.

**Clear**; fork, a stream in Raleigh County uniting with Marsh Fork to form Coal River.

**Clearcreek**; post village in Raleigh County. Altitude, 1,520 feet.

**Clear Fork**; gap in Guyandot Mountain in Raleigh and Wyoming counties.

**Clear Drain**; a right-hand branch of Fish Creek in Wetzel County.

**Clements**; post village in Barbour County on the Baltimore and Ohio Railroad.

**Clen**; fork, a right-hand branch of Laurel Branch of Clear Fork of Guyandot River in Wyoming County.

**Clen**; gap in spur of Guyandot Mountains, caused by Laurel Fork, in Wyoming County.

**Clendenin**; post village in Kanawha County on the Charleston, Clendennin and Sutton Railroad. Altitude, 624 feet.

**Cleveland**; post village in Webster County.

**Cleveland Knob**; summit in Nicholas County.

**Cliff**; run, a right-hand branch of Fish Creek in Wetzel County.

**Cliff Knob**; summit in Webster County. Altitude, 3,012 feet.

**Clifftop**; post village in Fayette County.

**Clifton**; village in Mason County on the Baltimore and Ohio Railroad. Population, 427.

**Clifton Mills**; post village in Preston County.

**Clifty**; post village in Fayette County.

**Climer**; creek, a very small left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Putnam County.

**Clint**; post village in Monroe County.

**Clinton**; post village in Ohio County.

**Clinton Furnace**; post village in Monongalia County.

**Clintonville**; post village in Greenbrier County.

**Clio**; post village in Roane County.

**Cloat**; run, a small left-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.

**Clover**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Clover**; run, a left-hand tributary to Cheat River, in Tucker County.

**Clover Creek**; mountain, a short ridge in Pocahontas County. Elevation, 3,000 to 4,000 feet.

**Cloverdale**; post village in Monroe County.

**Cloverlick**; branch, a small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Clover Lick**; fork, a left-hand branch of Oil Creek, in Lewis County.

**Cloverlick**; post village in Pocahontas County on the Chesapeake and Ohio Railway.

**Clower**; post village in Hardy County.

**Cluster**; post village in Pleasants County.

**Clyde**; post village in Wetzel County.

**Coal**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.

**Coal**; fork, a left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.

**Coal**; fork, a small left-hand branch of Campbell Fork, a tributary to Kanawha River, in Kanawha County:

**Coal**; river, a left-hand branch of Monongahela River in Marion County.

**Coal**; run, a large left-hand branch of Kanawha River, rising in Raleigh County, and flowing northeastward through Boone County. It forms the boundary line between a portion of Lincoln and Kanawha counties and enters Kanawha River at the town of St. Albans.

**Coal**; run, a small left-hand tributary to New River in Fayette County.

**Coal Bank**; branch, a small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Coalburg**; post village in Kanawha County on the Chesapeake and Ohio Railway and on Kanawha River. Altitude, 623 feet.

**Coaldale**; post village and railway station in Mercer County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 2,345 feet.

**Cobb**; creek, a left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.

**Cobbs**; post village in Boone County.

**Coburn**; post village in Wetzel County.

**Cochran Knob**; summit in Lewis County.

**Coco**; post village in Kanawha County.

**Coffin**; creek, a small left-hand tributary to Knapp Creek, a branch of Greenbrier River, in Pocahontas County.



**Coffman**; post village in Greenbrier County.

**Cokeleys**; village in Ritchie County.

**Coketon**; post village in Tucker County on the West Virginia Central and Pittsburgh Railway.

**Colaw Knob**; summit of the Allegheny Mountains in Pocahontas County. Altitude, 4,214 feet.

**Cold**; fork, a small right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.

**Cold Knob**; fork, a small left-hand tributary to South Fork of Cherry River in Greenbrier County.

**Cold Knob**; summit in Greenbrier County. Elevation, 4,318 feet.

**Cold Spring**; run, a very small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.

**Coldstream**; post village in Hampshire County.

**Coldwater**; post village in Doddridge County.

**Cole**; mountain, a short ridge in Greenbrier County south of Greenbrier River.

**Colebank**; post village in Preston County.

**Coleman**; creek, a right-hand branch of Guyandot River in Lincoln County.

**Colemans**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Coles**; mountain, a short ridge in Greenbrier County. Elevation, 2,500 feet.

**Colfax**; post village in Marion County on the Baltimore and Ohio Railroad.

**Colic**; mountain, a short ridge west of South Fork of Potomac River in Pendleton County.

**Colliers**; post village in Brooke County.

**Collins**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Collins**; run, a right-hand branch of Stewart's Creek in Gilmer County.

**Collison**; creek, a small left-hand tributary to Gauley River in Nicholas County.

**Columbia Sulphur Springs**; post village in Greenbrier County located on Anthony Creek.

**Columbus**; post village in Clay County.

**Comer**; branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.

**Comfort**; post village in Boone County.

**Conally**; run, a small right-hand tributary to Valley River in Randolph County.

**Conaway**; post village in Tyler County.

**Concord**; post village in Hampshire County.

**Concord Church**; village in Mercer County. Altitude, 2,620 feet.

**Confidence**; post village in Putnam County.

**Confluence**; post village in Lewis County.

**Conger**; fork, a small right-hand branch of Old Lick Creek, a tributary to Holly River, in Webster County.

**Congo**; post village in Hancock County on the Pittsburgh, Cincinnati, Chicago and St. Louis Railway.

**Conings**; post village in Gilmer County.

**Conley**; branch, a small right-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.

**Connelly**; branch, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Conyer**; fork, a right-hand branch of Cedar Creek, in Gilmer and Braxton counties.

**Cool**; branch, a very small right-hand tributary to Huff Creek, a branch of Guyandot River, in Wyoming County.

**Cool Spring Knob**; Summit in Webster County.



- Coon**; branch, a very small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Coon**; branch, a very small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Coon**; branch, a very small left-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Coon**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Coon**; creek, a very small right-hand tributary to Gauley River, in Webster County.
- Coon**; creek, a small left-hand branch of Meadow Creek, a tributary to New River, in Summers County.
- Coon**; creek, a right-hand tributary of Hurricane Creek in Putnam County.
- Coon**; creek, a left-hand tributary to Elk River in Braxton County.
- Coon**; fork, a small left-hand branch of Rock Castle Creek, a tributary to Guyandot River, in Wyoming County.
- Coon**; run, a right-hand branch of Cove Lick, a tributary to Sand Fork, in Lewis County.
- Coon**; run, a right-hand branch of West Fork River in Harrison and Marion counties.
- Cooney Otter**; creek, a left-hand branch of Barker Creek, a tributary to Guyandot River, in Wyoming County.
- Coon Knob**; summit in Braxton County. Altitude, 1,725 feet.
- Coon Knob**; triangulation station in Mingo County.
- Coonskin**; branch, a very small left-hand tributary to Elk River in Kanawha County.
- Coon Tree**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Cooper**; creek, a small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Cooper**; creek, a right-hand tributary to Elk River in Kanawha County.
- Cooper**; rock, a summit in Monongalia County. Elevation, 2,000 feet.
- Cooper**; run, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Cooper Knob**; Summit of Brown Mountain in Tucker County.
- Coopers**; post village in Mercer County on the Norfolk and Western Railway and on Bluestone River. Altitude, 2,266 feet.
- Copeland**; branch, a small right-hand tributary to Big Creek, a small branch of Gauley River, in Fayette County.
- Copeland**; knob in Taylor County.
- Copen**; post village in Braxton County.
- Copen**; run, a small right-hand tributary to Little Kanawha River in Braxton County.
- Copenhaver**; fork, a small left-hand tributary to Little Sandy Creek, a small branch of Elk River, in Kanawha County.
- Copenhaver**; post village in Kanawha County.
- Copper**; run, a left-hand tributary to Little Kanawha River in Gilmer and Braxton counties.
- Copperas Mine**; fork, a small left-hand branch of Trace Fork of Guyandot River, a tributary to Ohio River, in Logan County.
- Copperhead**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Copper Snake**; run, a small left-hand branch of Steer Run in Gilmer County.
- Corbin**; branch, a right-hand branch of Booths Creek in Taylor County.
- Corcoran**; post village in Randolph County.
- Core**; post village in Monongalia County.

- Corinth**; post village in Preston County on the Baltimore and Ohio Railroad.
- Cork**; post village in Tyler County.
- Corley**; post village in Braxton County.
- Corliss**; post village in Fayette County.
- Corn**; post village in Mason County.
- Cornstalk**; post village in Greenbrier County.
- Cornwallis**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Cortland**; post village in Tucker County.
- Cos**; post village in Upshur County.
- Cosner Gap**; height in Grant County. Elevation, 1,325 feet.
- Cottageville**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Cottle Glades**; marsh in Nicholas County.
- Cottle Knob**; summit in Nicholas County. Altitude, 3,120 feet.
- Cottonhill**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 792 feet.
- Cotton Hill**; short ridge south of Kanawha River in Fayette County.
- Couger**; fork, tributary to Holly River.
- Coulter**; run, a right-hand branch of Middle Wheeling Creek in Ohio County.
- Counterfeit**; branch, a small left-hand branch of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Countsville**; post village in Roane County.
- Courtney**; run, a left-hand branch of Monongahela River in Monongalia County.
- Cove**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Cove**; creek, a small right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Cove**; mount, a summit in Lincoln County. Altitude, 1,308 feet.
- Cove**; mountain, a short ridge in Monroe County. Elevation, 3,000 to 3,420 feet, the latter being the height of one of its peaks.
- Covecreek**; post village in Wayne County.
- Covegap**; post village in Wayne County.
- Cove Lick**; right-hand branch of Sand Fork in Lewis County.
- Cow**; creek, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Cow**; creek, a small left-hand branch of Poplar Fork of Kanawha River in Putnam County.
- Cow**; creek, a small left-hand branch of Pond Fork of Little Coal River in Boone County.
- Cow**; creek, a left-hand tributary to Island Creek, a branch of Guyandot River in Logan County.
- Cow**; run, a very small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Cowen**; town in Webster County on the Baltimore and Ohio Railroad. Population, 257.
- Cow Skin**; fork, a small left-hand branch of Lower Sleith Fork, in Braxton County.
- Coxs Landing**; post village in Cabell County on the Baltimore and Ohio Railroad.
- Coxs Mills**; post village in Gilmer County.
- Crabapple Knob**; summit in Kanawha County. Altitude, 1,380 feet.
- Crab Orchard**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Craig**; run, a small left-hand tributary to Williams River in Webster County.
- Craigmoor**; post village in Harrison County.
- Craigsville**; post village in Nicholas County.
- Crammeys**; run, a left-hand branch of Cheat River in Monongalia County.

- Cranberry**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Cranberry**; mountain, a short ridge in Pocahontas County. Elevation, 3,500 to 4,000 feet.
- Cranberry**; river, a large left-hand tributary to Gauley River. It rises in Cranberry Mountain in Pocahontas County and flows northwestward through Webster and Nicholas counties to its junction with the Gauley.
- Cranberry Flat**; short ridge between Laurel Branch and Stone Coal Run in the central part of Randolph County.
- Cranberry Glades**; marsh at the head of Cranberry River in Pocahontas County.
- Crane**; creek, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Crane**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Crane**; fork, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Crane Camp**; run, a small right-hand tributary to West Fork of Monongahela River in Lewis County.
- Cranesville**; post village in Preston County.
- Crane Trace**; branch, a small left-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Crany**; post village in Wyoming County.
- Craven**; run, a small right-hand tributary to Valley River in Randolph County.
- Crawford**; run, a small left-hand tributary to Gauley River in Nicholas County.
- Crawford**; run, a small right-hand tributary to Valley River in Randolph County.
- Crawford**; post village in Lewis County.
- Crawley**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Crawley**; post village in Greenbrier County.
- Crescent**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio Railway. Altitude, 638 feet.
- Creston**; post village in Wirt County.
- Crickard**; post village in Randolph County.
- Crickmer**; post village in Fayette County.
- Crimson Springs**; post village in Monroe County.
- Crisp**; post village in Pleasants County.
- Crook**; post village in Boone County.
- Crooked**; creek, a left-hand branch of Scary Creek, a tributary to Kanawha River, in Putnam County.
- Crooked**; creek, a small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Crooked**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Crooked**; fork, a left-hand branch of Sand Fork in Lewis County.
- Crooked**; fork, a right-hand branch of Right Fork of Steer Creek in Gilmer and Braxton counties.
- Crooked**; fork, a right-hand tributary to the head of Big Sycamore Creek, a small branch of Elk River, in Clay County.
- Crooked**; run, a small left-hand tributary to North River, a branch of Cacapon River, in Hampshire County.
- Crooked**; run, a small left-hand branch of Cedar Creek in Gilmer County.
- Crooked**; run, a small left-hand branch of Wolf Creek, a tributary to New River, in Fayette County.
- Crooked Ridge**; short spur in Fayette County.
- Crossroads**; post village in Monongalia County.

**Crouch Knob**; summit in Randolph County.

**Crow**; post village in Raleigh County.

**Crow**; run, a left-hand branch of Fishing Creek in Wetzel County.

**Crownhill**; post village in Kanawha County on the Chesapeake and Ohio Railway.

**Crow Summit**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Crump**; branch, a very small left-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.

**Crumps Bottom**; post village in Summers County.

**Cub**; branch, a very small right-hand tributary to Run Creek, a branch of Guyandot River, in Logan County.

**Cub**; branch, a small right-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Cub**; run, a right-hand tributary of Right Fork of Steer Creek in Gilmer County.

**Cuba**; post village in Jackson County.

**Cubana**; post village in Randolph County.

**Cucumber**; creek, an indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Culler**; run, a left-hand tributary to Lost River in Hardy County.

**Culloden**; town in Cabell County on the Chesapeake and Ohio Railway. Population, 99.

**Culverson**; creek, a small creek rising and sinking in Greenbrier County.

**Cummings**; creek, a small left-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.

**Cunningham**; fork, a left-hand branch of Big Buffalo Creek in Braxton County.

**Cunningham Knob**; summit of the Allegheny Mountains in Randolph County. Altitude, 4,485 feet.

**Cupboard**; run, a small left-hand tributary to Oil Creek in Lewis County.

**Curran Knob**; summit in Randolph County.

**Curry**; post village in Logan County.

**Curry Ridge**; a short spur between Plummer and Lost rivers in Taylor County.

**Curtin**; post village in Nicholas County on the Baltimore and Ohio Railroad.

**Curtis**; run, a left-hand tributary of Castleman Run in Ohio County.

**Cutlip**; fork, a right-hand branch of Little Otter Creek in Braxton County.

**Cutlips**; post village in Braxton County.

**Cutwright**; run, a small left-hand tributary to Buckhannon River in Upshur County.

**Cuzzart**; post village in Preston County.

**Cyclone**; post village in Logan County. Altitude, 854 feet.

**Cyrus**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Cyrus**; post village in Roane County.

**Daddy**; run, a left-hand branch of Cedar Creek in Gilmer County.

**Dahmer**; post village in Pendleton County.

**Dailey**; village in Jefferson County on the West Virginia Central and Pittsburgh Railway.

**Daisy**; village in Wood County.

**Dakon**; post village in Wetzel County.

**Dale**; post village in Tyler County.

**Dallas**; post village in Marshall County.

**Dallison**; post village in Wood County.

**Dam**; creek, a very small right-hand branch of Marrowbone Creek, a tributary to Tug Fork of Big Sandy River, in Logan County.

**Dameron**; post village in Raleigh County.

- Dan**; branch, a small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Dan Harman**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Daniels**; post village in Raleigh County.
- Danstown**; post village in Jackson County.
- Danville**; post village in Boone County.
- Darkesville**; post village in Berkeley County on the Cumberland Valley Railroad.
- Darnell**; hollow in Monongalia County.
- Dartmoor**; post village in Barbour County on the West Virginia Central and Pittsburgh Railway.
- Daubenspeck Knob**; summit in Nicholas County. Altitude, 3,020 feet.
- Dave**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.
- Dave Green**; branch, a small right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.
- Daves**; fork, a small right-hand branch of Brush Creek, a tributary to Bluestone River, in Mercer County.
- David**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Davis**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Davis**; creek, a left-hand tributary to Kanawha River in Kanawha County.
- Davis**; fork, a very small right-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.
- Davis**; run, a small left-hand tributary to Birch River in Braxton County.
- Davis**; town in Tucker County on the West Virginia Central and Pittsburgh Railway. Altitude, 1,077 feet. Population, 2,391.
- Davis Knob**; summit in Braxton County. Altitude, 1,565 feet.
- Davis, Mount**; triangulation station in Cabell County. Altitude, 1,077 feet.
- Davis Trace**; branch, a very small right-hand tributary to Middle Fork of Mud River in Lincoln County.
- Davisville**; post village in Wood County, on the Baltimore and Ohio Railroad.
- Davy**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Davy**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Davy**; station in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Davy Fork**; creek, a right-hand branch of Buffalo Creek in Marion County.
- Davy**; run, a small left-hand branch of Spice Run, a tributary to Greenbrier River, in Greenbrier County.
- Davy Cook**; branch, a very small right-hand tributary to Toney Fork of Clear Fork, a branch of Guyandot River, in Wyoming County.
- Davys**; creek, a small left-hand tributary to Greenbrier River in Greenbrier County.
- Dawson**; post village in Greenbrier County.
- Day**; mountain, a short spur in Pocahontas County. Elevation, 3,000 to 3,500 feet.
- Day**; run, a small right-hand tributary to Williams River in Pocahontas County.
- Daybrook**; post village in Monongalia County.
- Day Camp**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Dayton**; post village in Harrison County. Altitude, 925 feet.
- Dean**; post village in Wetzel County.

**Debby**; post village in Mason County.

**Deckers**; creek, a small right-hand branch of Monongahela River in Preston and Monongalia counties.

**Decota**; post village in Kanawha County.

**Deep**; run, a small right-hand tributary to North Fork of Potomac River in Mineral County.

**Deep**; run, a small left-hand tributary to Elk River in Webster County.

**Deep**; run, a small left-hand tributary to Holly River in Webster County.

**Deep Ford**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.

**Deep Hole**; creek, a very small right-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Deepvalley**; post village in Tyler County.

**Deepwater**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio Railway. Altitude, 645 feet.

**Deer**; creek, a right-hand branch of North Fork of Greenbrier River in Pocahontas County.

**Deer**; creek, a right-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.

**Deer**; run, a small right-hand tributary to Little Birch River in Braxton County.

**Deer**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton County.

**Deer Knob**; summit in Upshur County.

**Deerlick**; post village in Mason County.

**Deerrun**; post village in Pendleton County.

**Deerskin**; branch, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Deerwalk**; post village in Wood County.

**Defeat**; branch, a small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.

**Deitz**; post village in Fayette County.

**Dekalb**; post village in Gilmer County, situated on Little Kanawha River.

**Delancy**; post village in Wood County.

**Delashmeet**; creek, a very small left-hand tributary to Bluestone River in Mercer County.

**Delila**; post village in Webster County.

**Dell**; post village in Upshur County.

**Dellslow**; post village in Monongalia County on the Morgantown and Kingwood Railroad.

**Delong**; post village in Pleasants County.

**Delorme**; railway station in Logan County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.

**Delphi**; post village in Nicholas County.

**Delray**; post village in Hampshire County.

**Delta**; post village in Braxton County.

**Dempsey**; branch, a left-hand branch of Laurel Creek, a tributary to New River, in Fayette County.

**Dempsey**; mountain, a short ridge north of Greenbrier River in Summers County. Elevation, 2,500 feet.

**Dempsey**; post village in Fayette County.

**Dennis**; post village in Greenbrier County.

**Dennis**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.

- Dennison**; fork, a small left-hand branch of Laurel Fork, a tributary to Spruce Fork of Little Coal River, in Boone County.
- Dennison**; fork, a left-hand tributary of Mud River in Lincoln County.
- Dent**; post village in Barbour County.
- Desert**; branch, a small left-hand tributary to North Fork of Cherry River in Nicholas County.
- Desert**; fork, a right-hand head fork of Holly River in Webster County.
- Deskins**; fork, a small left-hand branch of Rich Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Deuls**; run, a left-hand branch of Buffalo Creek in Marion County.
- Devil**; creek, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Devil**; run, a very small right-hand tributary to Little Kanawha River in Braxton County.
- Devil**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Barbour and Randolph counties.
- Devil Nose**; summit in Clay County.
- Devils**; fork, a small left-hand tributary to Guyandot River in Raleigh County.
- Devils Den**; branch, a small right-hand branch of Leatherwood Creek, a tributary to Elk River, in Clay County.
- Dewey**; post village in Mercer County.
- De Witt**; post village in Wyoming County.
- Dexter**; post village in Roane County.
- Dial**; post village in Kanawha County.
- Diamond**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Diana**; post village in Webster County on the Holly River and Addison Railway.
- Diatter**; run, a small right-hand tributary to Birch River in Braxton County.
- Dick**; creek, a very small right-hand tributary to Little Coal River, a branch of Coal River and tributary to Kanawha River, in Boone County.
- Dickerson**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Dick Ridge**; spur in Nicholas County.
- Dickson**; post village in Wayne County on the Norfolk and Western Railway.
- Dick Trace**; small right-hand branch of Dingus Run, a tributary to Guyandot River, in Logan County.
- Dicy**; post village in Wayne County.
- Difficult**; creek, a small right-hand tributary to North Branch of Potomac River in Grant County.
- Dilley**; run, a small left-hand branch of Strange Creek, a tributary to Elk River, in Nicholas County.
- Dilleys Mill**; post village in Pocahontas County.
- Dillon**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.
- Dillon**; run, a small left-hand tributary to Cacapon River in Hampshire County.
- Dillons Run**; post village in Hampshire County.
- Dimmock**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,045 feet.
- Dingess**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Dingess**; branch, a very small left-hand tributary to Elk Creek, a branch of Guyandot River, in Logan County.
- Dingess**; branch, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.



- Dingess**; fork, a very small left-hand branch of Big Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Dingess**; post village in Mingo County.
- Dingess**; station in Logan County on the Norfolk and Western Railway and on Right Fork of Twelvepole Creek.
- Dingess Trace**; very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Dingus**; run, a small right-hand branch of Guyandot River in Logan County.
- Divide**; post village in Fayette County.
- Dixie**; post village in Fayette County.
- Dixon**; run, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Doak**; post village in Doddridge County.
- Doane**; post village in Wayne County, on the Norfolk and Western Railway.
- Dobbin**; post village in Grant County on North Fork of Potomac River and on the West Virginia Central and Pittsburg Railway. Altitude, 2,593 feet.
- Dobbin Ridge**; short, broken, mountainous country in Tucker and Grant counties.
- Doctor**; branch, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Dodd**; post village in Roane County.
- Doddridge**; county, situated in the northwestern part of the State on the Allegheny plateau. Area, 344 square miles. Population, 13,689—white, 13,663; negro, 25; foreign born, 129. County seat, West Union. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature, 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Dodrill**; post village in Calhoun County.
- Dodson**; run, a small right-hand tributary to Valley River in Randolph County.
- Doe**; branch, a small left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Doe**; run, a left-hand branch of Tygarts Valley River in Taylor County.
- Dogbone**; branch, a small left-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Dogway**; fork, a small left-hand tributary to Cranberry River in Webster and Pocahontas counties.
- Dogwood**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.
- Dola**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Dolan Knob**; summit on boundary line between Cabell and Wayne counties. Altitude, 1,090 feet.
- Doman**; post village in Hardy County.
- Dombey**; village in Wood County.
- Donald**; post village in Nicholas County.
- Donlan**; post village in Gilmer County.
- Donnelly**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Donohue**; post village in Ritchie County.
- Dorcas**; post village in Grant County.
- Dority**; post village in Preston County.
- Dorr**; post village in Monroe County.
- Dorsey**; branch, a very small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Dorsey**; knob in Monongalia County. Elevation, 1,438 feet.
- Dotson**; post village in McDowell County.

- Double Camp**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Dougher Knob**; summit in Greenbrier County. Altitude, 2,818 feet.
- Doughertys**; creek, a small right-hand tributary to Cheat River in Preston County.
- Douglas**; fork, a small right-hand tributary to Elk River in Randolph County.
- Douglas**; post village in Calhoun County on the West Virginia Central and Pittsburgh Railway.
- Dovener**; post village in Lewis County.
- Dowdy**; creek, a very small right-hand tributary to New River in Fayette County.
- Doyle**; post village in Wood County.
- Dragstone**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne County.
- Drake**; run, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Drawdy**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Drews**; creek, a left-hand branch of Peachtree Creek, a tributary to Marsh Fork of Coal River, in Raleigh County.
- Drift**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Driftwood**; post village in Pocahontas County.
- Driscoll**; post village in Pocahontas County.
- Droop**; mountain, a short spur in Greenbrier and Pocahontas counties. One of its peaks has an altitude of 3,634 feet.
- Dropping Lick**; creek, a small left-hand tributary to Indian Creek, a branch of New River, in Monroe County.
- Dry**; branch, a very small left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.
- Dry**; branch, a small right-hand tributary to Campbell Creek, a branch of Kanawha River, in Kanawha County.
- Dry**; branch, a small right-hand branch of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Dry**; branch, a right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Dry**; branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Dry**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Dry**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Dry**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Dry**; creek, a small right-hand branch of Rich Creek, a tributary to New River, in Monroe County.
- Dry**; creek, a small right-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.
- Dry**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Dry**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Dry**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Dry**; creek, a left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County. Its headwater is known locally as Tuckahoe Creek.

- Dry**; fork, a left-hand branch of Lower Bull Run, a small right-hand tributary to Cedar Creek, in Gilmer County.
- Dry**; fork, a right-hand fork of Cheat River in Tucker and Randolph counties.
- Dry**; fork, a small right-hand tributary to Elk River in Pocahontas County.
- Dry**; fork, a large right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Dry**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.
- Dry**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Dry**; run, a right-hand tributary to North Fork of Potomac River in Pendleton County.
- Dry**; run, a small right-hand tributary to Valley River in Randolph County.
- Dry**; run, a small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Dry**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton County.
- Dry**; run, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Dry**; run, a left-hand branch of Tanner Creek in Gilmer County.
- Dry**; run, a right-hand branch of Lost Run in Taylor County.
- Drybranch**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Drycreek**; post village in Raleigh County. Altitude, 1,342 feet.
- Dryfork**; post village in Randolph County on the Dry Fork Railroad.
- Dryrun**; hollow in Horse Ridges in Morgan County.
- Dryrun**; post village in Pendleton County.
- Dubree**; post village in Fayette County.
- Duck**; creek, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Duck**; creek, a small right-hand branch of Elk River in Braxton County.
- Duckworth**; post village in Doddridge County on the Baltimore and Ohio Railroad.
- Dudley**; fork, a left-hand tributary of Pyles Fork of Buffalo Creek in Marion County.
- Dudley**; post village in Cabell County.
- Duffields**; post village in Jefferson County on the Baltimore and Ohio Railroad. Altitude, 562 feet.
- Duffy**; post village in Lewis County.
- Dugout**; post village in Raleigh County.
- Duhring**; post village in Mercer County on the Norfolk and Western Railway and on Bluestone River. Altitude, 2,333 feet.
- Duke**; post village in Kanawha County on the Baltimore and Ohio Railroad.
- Dulin**; post village in Wirt County.
- Dull**; creek, a small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Dumpling**; run, a small left-hand tributary to South Branch of Potomac River in Hampshire and Hardy counties.
- Duncan**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Duncan**; run, a small left-hand branch of Deer Creek, a tributary to North Fork of Greenbrier River, in Pocahontas County.
- Dunham Lick**; run, a right-hand branch of Prichett Creek in Marion County.
- Dunkard**; creek, a left-hand branch of Monongahela River, heading in Monongalia County in North, South, and Middle forks.
- Dunkard Mill**; run, a left-hand branch of Buffalo Creek in Marion County.
- Dunleith**; post village in Wayne County.
- Dunloup**; creek, a small left-hand tributary to New River in Fayette and Raleigh counties.

**Dunlow**; post village in Wayne County on the Norfolk and Western Railway.

**Dunmore**; post village in Pocahontas County.

**Dunns**; post village in Mercer County.

**Duo**; post village in Greenbrier County.

**Durbin**; post village in Pocahontas County on the Chesapeake and Ohio and on the West Virginia Central and Pittsburg railways.

**Dust Camp**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.

**Dutch**; fork, a very small left-hand tributary to Pocahontas River in Kanawha County.

**Dyers**; run, a small left-hand tributary to Elk River in Webster County.

**Eads Ridge**; summit in Monroe County. Altitude, 2,854 feet.

**Eagle**; branch, a small right-hand tributary to Greenbrier River in Summers County.

**Eagle**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio Railway.

**Eagle Mills**; post village in Doddridge County.

**Earl**; post village in Nicholas County.

**Earnshaw**; post village in Wetzel County.

**East**; fork, a right-hand branch of Fourteenmile Creek, a tributary to Guyandot River, in Lincoln County.

**East**; river, a left-hand tributary to New River in Mercer County.

**East**; run, a right-hand branch of Buffalo Creek in Marion County.

**Eastbank**; town in Kanawha County on the Chesapeake and Ohio Railway and on Kanawha River. Altitude, 623 feet. Population, 468.

**East Lynn**; post village in Wayne County.

**Easton**; post village in Monongalia County on the Baltimore and Ohio Railroad. Altitude, 967 feet.

**East River**; mountain, a ridge extending along boundary line between Mercer County, West Va., and Bland County, Va.

**East River**; station in Mercer County on the Norfolk and Western Railway and on East River.

**East Sewell**; station in Fayette County on the Chesapeake and Ohio Railway and on New River.

**Easy**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.

**Eatons**; post village in Wood County.

**Eby**; post village in Taylor County.

**Echart**; post village in Boone County. Altitude, 1,424 feet.

**Echo**; post village in Wayne County on the Norfolk and Western Railway.

**Eckman**; post village in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek.

**Eden**; post village in Calhoun County.

**Edens**; fork, a small left-hand branch of Right Fork of Twomile Creek, a tributary to Elk River, in Kanawha County.

**Edgar**; post village in Jackson County.

**Edgerton**; post village in Mingo County.

**Edgington**; post village in Brooke County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway. Altitude, 702 feet.

**Edith**; post village in Wyoming County.

**Edmiston**; post village in Lewis County.

**Edmond**; post village in Fayette County.

**Edmonds**; branch, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Edray**; post village in Pocahontas County.

**Edwin**; post village in Webster County.

**Efaw**; knob in Monongalia County.

**Effie**; post village in Wayne County.

**Egeria**; post village in Raleigh County.

**Eggleton**; post village in Putnam County.

**Eglon**; post village in Preston County.

**Egypt**; post village in Wayne County.

**Eighteenmile**; fork, a small right-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.

**Eighteen Mile**; small left-hand tributary to Ohio River in Putnam County.

**Eldora**; post village in Marion County.

**Elgood**; post village in Mercer County. Altitude, 2,870 feet.

**Eli**, post village in Wood County.

**Elijah**; creek, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.

**Eliza**; run, a left-hand tributary of Buffalo Creek in Marion County.

**Elizabeth**; county seat of Wirt County on the Little Kanawha Railroad. Population, 657.

**Elk**; creek, a small branch of Monongahela River in Harrison County.

**Elk**; creek, a small right-hand tributary to Guyandot River in Logan County.

**Elk**; fork, a small right-hand tributary to Pigeon Creek, a branch of Tug Fork of Big Sandy River, in Logan County.

**Elk**; mountain, a ridge between Elk and Holly rivers in Webster County. Elevation, 1,500 to 2,500 feet.

**Elk**; mountain, a short ridge near the head of North Fork of Potomac River.

**Elk**; mountain, a summit in Randolph County. Elevation, 4,000 feet.

**Elk**; mountain, a ridge lying east of Dry Fork of Elk River in Randolph County.

**Elk**; village in Tucker County.

**Elk**; river, a right-hand branch of Kanawha River in Webster, Braxton, Clay, and Kanawha counties.

**Elk**; run, a small right-hand tributary to North Branch of Potomac River in Grant County.

**Elk Garden**; town in Mineral County on the West Virginia Central and Pittsburg Railroad. Altitude, 2,300 feet; population, 581.

**Elkhorn**; creek, a right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Elkhorn**; post village in McDowell County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 1,885 feet.

**Elkhorn Rock**; summit on South Fork Mountain in Hardy County.

**Elkins**; branch, a very small right-hand tributary to Left Fork of Mud River in Lincoln County.

**Elkins**; branch, a small left-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.

**Elkins**; county seat of Randolph County on the West Virginia Central and Pittsburg Railroad. Population, 2,016.

**Elkins Gap**; triangulation station in Wyoming County. Elevation, 1,944 feet.

**Elk Knob**; post village in Summers County.

**Elklick**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Elklick**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.

**Elk Lick**; branch, a small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Elk Lick**; left-hand head fork of Laurel Fork of Cheat River in Randolph County.

**Elk Lick**; small left-hand tributary to Oil Creek in Lewis County.

- Elklick**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Elk Trace**; small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.
- Elk Trace**; small right-hand branch of Big Tub Creek, a tributary to Guyandot River, in Wyoming County.
- Elk Twomile**; creek, a left-hand tributary to Elk River in Kanawha County.
- Elk water**; left-hand tributary to Valley River in Randolph County.
- Elkwater**; post village in Randolph County.
- Ella**; post village in Marshall County.
- Elleber**; run, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Elleber Ridge**; summit between Elleber Run and Tackey Fork in Pocahontas County. Elevation, 4,000 to 4,500 feet.
- Ellenboro**; post village in Ritchie County.
- Elliot**; post village in Fayette County.
- Ellis**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Ellis**; creek, a right-hand branch of Sand Fork and tributary to Little Kanawha River in Gilmer County.
- Ellis**; post village in Gilmer County on Ellis Creek.
- Ellison**; post village in Summers County.
- Ellsworth**; post village in Ritchie County.
- Elm**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas and Clay counties.
- Elmgrove**; town in Ohio County on the Baltimore and Ohio Railroad. Altitude, 681 feet; population, 768.
- Elmira**; post village in Braxton County.
- Elmo**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 860 feet.
- Elmwood**; post village in Mason County on the Chesapeake and Ohio Railway.
- Eloise**; post village in Wayne County.
- Elton**; post village in Summers County.
- Elverton**; post village in Fayette County.
- Elwell**; post village in Mason County on the Baltimore and Ohio Railroad.
- Ely**; fork, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Emanuel**; hill, a summit in Fayette County. Altitude, 2,360 feet.
- Emma**; post village in Putnam County.
- Emory**; post village in Mineral County.
- Endicott**; post village in Wetzel County.
- England**; run, a small left-hand tributary to Little Kanawha River in Braxton County.
- Ennis**; post village in McDowell County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 1,990 feet.
- Enoch**; branch, a small left-hand tributary to Gauley River in Nicholas and Webster counties.
- Enoch**; post village in Clay County.
- Enoch**; run, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Enon**; post village in Nicholas County.
- Enterprise**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Entry**; mountain, a summit in Pendleton County.
- Ephraim**; creek, a very small right-hand tributary to New River in Fayette County.

- Erbacon**; post village in Webster County on the Baltimore and Ohio Railroad.
- Erie**; post village in Wayne County on the Baltimore and Ohio Railroad.
- Ernest**; post village in Roane County.
- Etam**; post village in Preston County.
- Ethel**; post village in Boone County.
- Euclid**; post village in Calhoun County.
- Eugene**; post village in Mingo County.
- Eureka**; post village in Pleasants County on the Baltimore and Ohio Railroad.
- Eva**; post village in Ritchie County.
- Evans**; branch, a very small left-hand tributary to Barker Creek, a branch of Guy-andot River, in Wyoming County
- Evans**; fork, a small left-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha County.
- Evans**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Evans**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Evansville**; post village in Preston County.
- Evelyn**; post village in Wirt County.
- Everett**; post village in Tyler County.
- Evergreen**; post village in Upshur County.
- Everson**; post village in Marion County on the Baltimore and Ohio Railroad.
- Ewing**; fork, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Extra**; post village in Putnam County.
- Extract**; post village in Hampshire County.
- Eye**; post village in Nicholas County.
- Eyes**; run, a small right-hand tributary to Thorn Run of South Branch of Potomac River in Pendleton County.
- Fabius**; post village in Hardy County.
- Faily**; creek, a very small left-hand tributary to New River in Raleigh County.
- Fairfax**; post village in Mingo County on the West Virginia Central and Pittsburg Railroad.
- Fairfield**; post village in Kanawha County on the Chesapeake and Ohio Railway.
- Fairmont**; county seat of Marion County on the Baltimore and Ohio Railroad. Altitude, 888 feet. Population, 5,655.
- Fairplain**; post village in Jackson County.
- Fairview**; village in Hancock County. Population, 407.
- Falkner**; branch, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Fall**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Kanawha and Lincoln counties.
- Fall**; run, a right-hand branch of Little Kanawha River in Braxton County.
- Fall**; run, a small right-hand branch of Back Fork of Holly River in Webster County.
- Fall**; run, a small left-hand branch of Right Fork of Holly River in Braxton County.
- Fallen Timber**; run, a small right-hand tributary to Little Kanawha River in Lewis County.
- Fallen Timber**; short ridge in the western part of Pocahontas County. Elevation, 4,000 feet.
- Falling Rock**; creek, a left-hand tributary to Elk River in Kanawha and Clay counties.
- Falling Spring**; mountain, a short ridge north of Greenbrier River in Greenbrier County. Elevation, 2,500 feet.
- Falling Spring**; post village in Greenbrier County located on Greenbrier River.
- Falling Spring**; run, a small right-hand tributary to Elk River in Randolph County.



- Falling Waters**; post village in Berkeley County on the Cumberland Valley Railroad.
- Fall Rock**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Falls**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Falls**; creek, a small left-hand tributary to Kanawha River in Fayette County.
- Falls**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Falls**; post village in Grant County.
- Fallsmill**; post village in Braxton County.
- Fanlight**; post village in Wetzel County.
- Far**; post village in Wetzel County.
- Farley**; branch, a small left-hand tributary to Cabin Creek, a branch of Guyandot River, in Wyoming County.
- Farley**; branch, an indirect right-hand tributary to Tommy Creek, a head fork of Guyandot River, in Raleigh County.
- Farley**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Farley**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Farmington**; post village in Marion County on the Baltimore and Ohio Railroad.
- Farnum**; post village in Harrison County.
- Fat**; creek, a small right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Faulkner**; post village in Randolph County on the West Virginia Central and Pittsburgh Railroad.
- Fayette**; county, situated a little south of the central part of the State on the Allegheny Plateau. It is drained by the Kanawha, New, and Gauley rivers. Area, 775 square miles. Population, 31,987—white, 26,130; negro, 5,857; foreign born, 975. County seat, Fayetteville. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 55° to 55°. The county is traversed by the Chesapeake and Ohio and by the Kanawha and Michigan railways.
- Fayette**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 900 feet.
- Fayetteville**; county seat of Fayette County about three miles west of New River. Altitude, 1,750 feet. Population, 413.
- Federal**; post village in Pleasants County.
- Feed Trough**; run, a small right-hand tributary to Birch River in Nicholas County.
- Fellowsville**; post village in Preston County.
- Felt**; run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Ferguson**; post village in Wayne County.
- Fern**; creek, a small right-hand tributary to New River in Fayette County.
- Fern**; post village in Pleasants County.
- Ferris**; post village in Fayette County.
- Ferrum**; village in Jefferson County.
- Ferry**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Ferry**; run, a right-hand tributary of Buffalo Creek in Brooke County.
- Festus**; village in Marion County.
- Fetterman**; town in Taylor County on the Baltimore and Ohio Railroad. Altitude, 984 feet. Population, 796.

- Fez;** creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Fields;** creek, a small left-hand tributary to Kanawha River in Kanawha County.
- Fifteenmile;** creek, a small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Fifteenmile;** fork, a left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Files;** creek, a right-hand branch of Valley River in Randolph County.
- Finch;** post village in Ritchie County.
- Finlow;** post village in Fayette County.
- Finney;** branch, a small right-hand tributary to Kanawha River in Kanawha County.
- Finster;** post village in Lewis County.
- Fire;** creek, a very small right-hand tributary to New River in Fayette County.
- Firecreek;** post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,029 feet.
- Fish;** creek, a small left-hand branch of Ohio River in Marshall County.
- Fisher;** fork, a right-hand branch of Rocky Fork of Pocotaligo River, a tributary to Kanawha River, in Kanawha County.
- Fisher Knob;** summit in Braxton County. Elevation, 1,710 feet.
- Fishhook;** fork, a small left-hand tributary to Blake Branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Fishing;** creek, a left-hand branch of Ohio River heading in North and South Forks in Wetzel County.
- Fishing Hawk;** small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Fishpot;** run, a right-hand branch of Little Kanawha River in Gilmer County.
- Fitz;** run, a small left-hand tributary to Sand Fork in Lewis County.
- Fitzwater;** branch, a small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Fitzwater;** run, a small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Five Lick;** run, a small right-hand tributary to Laurel Fork of Cheat River in Randolph County.
- Five Mile;** creek, a small left-hand tributary to East River, a branch of New River, in Mercer County.
- Fivemile;** fork, a left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Fivemile;** fork, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Fivemile;** fork, a small right-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Fivemile;** fork, a small right-hand branch of Cooper Creek, a tributary to Kanawha River, in Kanawha County.
- Fivemile;** post village in Mason County.
- Flag;** run, a small left-hand tributary to Cheat River in Preston County.
- Flaggy Meadow;** run, a right-hand branch of Buffalo Creek in Marion County.
- Flat;** fork, a small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Flat;** run, a right-hand branch of Tygart Valley River in Taylor County.
- Flat;** run, a small left-hand branch of Sycamore Creek in Gilmer County.
- Flat;** run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Flatfork;** post village in Roane County.
- Flatrock;** post village in Mason County.

**Flat Top**; mountain, a ridge in Wyoming, Mercer, Raleigh, and Summers counties.

Average altitude, 3,375 feet.

**Flat Top**; mountain, a summit in Monroe County. Altitude, 3,375 feet.

**Flattop**; post village in Mercer County. Altitude, 3,180 feet.

**Flat Top**; summit in Nicholas County.

**Flatwoods**; post village in Braxton County, on the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads. Altitude, 1,223 feet.

**Flatwoods**; run, a small right-hand tributary to Elk River in Braxton County.

**Flaxton**; post village in Mason County.

**Fleming**; fork, a right-hand branch of Buffalo Creek in Marion County.

**Fleming**; run, a small left-hand tributary to Anthony Creek, a branch of Greenbrier River, in Greenbrier County.

**Flemington**; post village in Taylor County on the Baltimore and Ohio Railroad.

**Fleshy**; run, a small right-hand tributary to Little Kanawha River in Braxton County.

**Fletcher**; post village in Jackson County.

**Flinn**; post village in Jackson County.

**Flint**; post village in Doddridge County.

**Flint**; run, a small left-hand branch of The Creek and tributary to Back Fork of Elk River in Randolph County.

**Flint**; run, a small left-hand tributary to Ohio River in Doddridge County.

**Flipping**; creek, a small left-hand tributary to Bluestone River in Mercer County.

**Flippins Ridge**; mountains in Mercer County.

**Floding**; post village in Cabell County.

**Flora**; post village in Barbour County.

**Floyd**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Folsom**; post village in Wetzel County.

**Foltz**; post village in Berkeley County.

**Fonda**; post village in Harrison County.

**Foote**; post village in Mineral County.

**Ford**; post village in Wood County.

**Ford Knob**; summit of Big Sewell Mountain in Fayette County. Altitude, 3,330 feet.

**Ford Knob**; summit in Fayette County. Altitude, 2,860 feet.

**Fore Knobs**; summits in Allegheny Front in Grant County.

**Foresthill**; post village in Summers County.

**Fork**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.

**Fork**; mountain, a short ridge in Webster County.

**Fork**; mountain, a ridge on the south side of Cranberry River, separating it from the headwaters of the Greenbrier.

**Fork**; mountain, a short ridge near the head of Greenbrier River.

**Fork Ridge**; mountains in Mercer County.

**Fork Ridge**; short spur of Middle Fork Mountains.

**Forksburg**; village in Marion County.

**Forks of Capon**; post village in Hampshire County.

**Forks of Little Sandy**; post village in Kanawha County.

**Fort**; branch, a small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Fort Gay**; post village in Wayne County.

**Fort Laurel**; creek, a small right-hand tributary to New River in Fayette County, called Laurel Creek at its mouth.

**Fort Seybert**; post village in Pendleton County.

- Fort Spring**; post village in Greenbrier County on Greenbrier River and on the Chesapeake and Ohio Railway. Altitude, 1,626 feet.
- Forty Weight**; branch, a small head tributary to Laurel Fork, a tributary to Clear Fork of Guyandot River, in Raleigh County.
- Foss**; post village in Summers County.
- Foster**; post village in Boone County.
- Foster Chapel**; post village in Jackson County.
- Fountain Spring**; post village in Wood County.
- Fourmile**; creek, a small left-hand branch of Lens Creek, a tributary to Kanawha River, in Kanawha County.
- Fourmile**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Fourmile**; fork, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Fourmile**; fork, a very small left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Fourmile**; fork, a small left-hand branch of Paint Creek, a tributary to Kanawha River, in Kanawha County.
- Fourmile**; fork, a small right-hand branch of Whiteoak Creek, a tributary to Coal River, in Boone County.
- Fourmile**; fork, a right-hand branch of Cooper Creek, a tributary to Elk River, in Kanawha County.
- Fourmile**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Four Pole**; creek, a very small right-hand branch of Tug Fork of Big Sandy River in Mingo County.
- Fourpole**; creek, a small left-hand tributary to Ohio River in Wayne and Cabell counties.
- Fourteen**; post village in Lincoln County.
- Fourteenmile**; creek, a small left-hand branch of Guyandot River, a tributary to Ohio River, in Lincoln County.
- Fowlerknob**; post village in Nicholas County.
- Fox**; post village in Braxton County.
- Fox Knob**; summit in Nicholas County.
- Fox Tree**; run, a small left-hand tributary to Cranberry River in Webster County.
- Frame**; run, a left-hand branch of Strange Creek in Braxton County.
- Frame Knob**; summit in Braxton County. Elevation, 1,563 feet.
- Frametown**; post village in Braxton County.
- Frances**; creek, a small right-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Frank**; branch, a small left-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay County.
- Frank**; fork, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Frank**; fork, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming and Raleigh counties.
- Frank**; post village in Putnam County.
- Frankford**; town in Greenbrier County. Population, 138.
- Franklin**; branch, a small right-hand branch of Twomile Creek, a tributary to Guyandot River, in Lincoln County.
- Franklin**; county seat of Pendleton County on the Baltimore and Ohio Railroad. Population, 205.
- Frazier**; run, a small left-hand tributary to Cheat River in Preston County.
- Fraziers Bottom**; post village in Putnam County.

**Freed**; post village in Calhoun County.

**Freeman**; post village in Mercer County, on the Norfolk and Western Railway.  
Altitude, 2,258 feet.

**Freemansburg**; post village in Lewis County.

**Freeport**; post village in Wirt County.

**Freeze**; fork, a head fork of Dingus Run, a tributary to Guyandot River, in Logan County.

**French**; creek, a left-hand branch of Buckhannon River in Upshur County.

**Frenchcreek**; post village in Upshur County.

**Frenchton**; post village in Upshur County.

**Frew**; post village in Tyler County.

**Friarshill**; post village in Greenbrier County.

**Friendly**; town in Tyler County, on the Baltimore and Ohio Railroad. Population, 253.

**Friends**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.

**Frisco**; village in Marion County.

**Front Hills**; summits in Grant County.

**Frost**; post village in Pocahontas County.

**Frozen**; branch, a very small left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.

**Frozenscamp**; post village in Jackson County.

**Fry**; post village in Kanawha County.

**Fudge**; branch, a very small left-hand tributary to Little Sandy Creek, a small branch of Elk River, in Kanawha County.

**Fudger**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Fudges Creek**; post village in Cabell County.

**Fullen**; post village in Monroe County.

**Fulton**; creek, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.

**Fuqua**; creek, a small right-hand branch of Coal River, a tributary to Kanawha River, in Lincoln County.

**Furber**; run, a right-hand branch of Proctor Creek in Wetzel County.

**Furnace**; post village in Mineral County.

**Furnett**; branch, a very small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.

**Furnett**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Fury Knob**; summit in Nicholas County.

**Gad**; post village in Nicholas County.

**Gaines**; post village in Upshur County.

**Galfred**; run, a small left-hand branch of Suttleton Creek, a tributary to Greenbrier River, in Pocahontas County.

**Gallatin**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Galletin**; village in Marion County.

**Gandeeville**; post village in Roane County.

**Gandy**; creek, a right-hand head fork of Dry Fork of Cheat River in Randolph County.

**Gandy**; run, a small right-hand tributary to Red Creek in Tucker County.

**Ganotown**; post village in Berkeley County.

**Gap**; mountain in Monroe County.

**Gapmills**; post village in Monroe County.

- Garden Gap**; branch, a very small left-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Garden Ground**; mountain in Fayette County.
- Gardner**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Garfield**; post village in Jackson County.
- Garland**; fork, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Garland**; post village in Barbour County.
- Garnet**; post village in Kanawha County.
- Garrett**; creek, a small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Garretts Bend**; post village in Lincoln County.
- Garrison**; run, a left-hand branch of Castleman Run in Ohio County.
- Gary**; post village in Webster County on the Norfolk and Western Railway.
- Gashell**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- Gaston**; post village in Lewis County on the West Virginia Central and Pittsburg Railroad. Altitude 1,040 feet.
- Gate**; fork, a right-hand tributary of Left Fork of Steer Creek in Braxton and Gilmer counties.
- Gates**; post village in Monroe County.
- Gatewood**; branch, a small right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Gatewood**; post village in Fayette County.
- Gath**; village in Marion County.
- Gauley**; mountain, a ridge in Randolph and Pocahontas counties. Elevation, 4,000 feet.
- Gauley**; mountain, a ridge between Gauley and New rivers, forks of Kanawha River, in Fayette County. Elevation, 1,500 to 2,000 feet.
- Gauley**; river, a right-hand branch of Kanawha River, entering it about 20 miles above Charleston. Length, 109 miles.
- Gauley Bridge**; post village in Fayette County on Gauley River and on the Chesapeake and Ohio Railway.
- Gay**; post village in Jackson County.
- Gay Knob**; summit in Pocahontas County.
- Gazil**; post village in Kanawha County.
- Geho**; post village in Calhoun County.
- Gem**; post village in Braxton County.
- Geneva**; post village in Roane County.
- Genoa**; post village in Wayne County on the Norfolk and Western Railway.
- George**; branch, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- George**; branch, a small right-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- George**; branch, a very small left-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- George**; run, a left-hand tributary of Ohio River in Ohio County.
- Georges**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Georgetown**; post village in Monongalia County.
- Georgie**; post village in Wood County.
- German**; post village in Braxton County.
- Gerrardstown**; post village in Berkeley County.
- Get Out**; run, a tributary to Little Kanawha River in Upshur County.
- Giatto**; post village in Mercer County.

- Gibson**; branch, a small right-hand tributary to Fifteenmile Fork of Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Gibson**; post village in Pleasants County on the Norfolk and Western Railway.
- Gibson Knob**; summit in Pocahontas County. Altitude, 4,360 feet.
- Gibsons Mill**; post village in Fayette County.
- Gilbert**; creek, a left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Gilbert**; post village in Mingo County. Altitude, 832 feet.
- Gilboa**; post village in Nicholas County.
- Gilkerson**; post village in Wayne County.
- Gilliam**; post village in McDowell County on the Norfolk and Western Railway.
- Gillespie**; run, a left-hand branch of Middle Wheeling Creek in Ohio County.
- Gilmer**; county situated in the central part of the county, on the Allegheny Plateau. It is here deeply dissected. It is traversed and drained by Little Kanawha River. Area, 367 square miles. Population, 11,762—white, 11,726; negro, 36; foreign born, 18. County seat, Glenville. The mean magnetic declination in 1900 was  $1^{\circ} 20'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature,  $50^{\circ}$  to  $55^{\circ}$ .
- Girta**; post village in Ritchie County.
- Girty**; run, a left-hand tributary of Ohio River in Brooke County.
- Given**; branch, a very small right-hand tributary to Elk River in Kanawha County.
- Given**; post village in Jackson County.
- Glade**; creek, a left-hand branch of New River in Raleigh County.
- Glade**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.
- Glade**; creek, a small left-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Glade**; creek, a small right-hand tributary to New River in Fayette County.
- Glade**; run, a left-hand tributary of Pawpaw Creek in Marion County.
- Glade**; run, a right-hand tributary of Cheat River in Monongalia County.
- Glade**; run, a small right-hand tributary to Blackwater River in Tucker County.
- Glade**; run, a small left-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.
- Glade**; station in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,236 feet.
- Glade farms**; post village in Preston County.
- Gladesville**; post village in Preston County.
- Gladwin**; post village in Tucker County, on the Dry Fork Railroad.
- Gladys**; creek, a right-hand branch of Little Kanawha River in Lewis County.
- Gladys**; creek, a right-hand branch of Tygarts Valley River in Marion County.
- Gladys**; creek, a small right-hand tributary to Laurel Creek, a branch of Valley River, in Barbour County.
- Gladys**; fork, a large left-hand branch of Dry Fork, one of the head forks of Cheat River, in Randolph and Tucker counties.
- Gladys**; fork, a small left-hand tributary to Right Fork of Stone Coal Creek in Upshur County.
- Gladys**; fork, a left-hand tributary to Brush Creek, a branch of Bluestone River, in Mercer County.
- Gladys**; post village in Randolph County, on the West Virginia Central and Pittsburg Railway.
- Glass Lick**; small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Glebe**; post village in Hampshire County.
- Glenalum**; post village in Mingo County on the Norfolk and Western Railway.



**Glencoe**; post village in Greenbrier County.

**Glen Easton**; post village in Marshall County.

**Glen Falls**; post village in Harrison County.

**Glengary**; post village in Berkeley County.

**Glenns**; run, a left-hand branch of Ohio River in Ohio County.

**Glenville**; county seat of Gilmer County on Little Kanawha River. Population, 398. Altitude, 738 feet.

**Glenwood**; post village in Mason County.

**Glomera**; post village in Raleigh County.

**Glover**; branch, a very small right-hand branch of Guyandot River, a branch of Ohio River, in Lincoln County.

**Glovergap**; post village in Marion County on the Baltimore and Ohio Railroad. Altitude, 1,146 feet.

**Gluck**; run, a very small right-hand tributary to Little Kanawha River in Gilmer County.

**Gnat**; run, a small right-hand tributary to Gauley River in Webster County.

**Godby Knob**; summit in Logan County.

**Godfrey**; branch, a small right-hand tributary to Wide Mouth Creek, a branch of Bluestone River, in Mercer County.

**Godfrey**; post village in Mercer County.

**Goffs**; post village in Ritchie County.

**Golden**; post village in Marshall County.

**Goldtown**; post village in Jackson County.

**Gomez**; post village in Calhoun County.

**Goodhope**; post village Harrison County.

**Goodwill**; post village in Mercer County on the Norfolk and Western Railway.

**Goose**; creek, a right-hand branch of Tygarts Valley River in Marion County.

**Goosecreek**; post village in Ritchie County.

**Goose Lick**; left-hand branch of Indian Fork in Lewis County.

**Gooseneck**; post village in Ritchie County.

**Gordon**; post village in Boone County on the Norfolk and Western Railway.

**Gormanian**; post village in Grant County on North Branch of Potomac River and on the West Virginia Central and Pittsburg Railway.

**Gough**; run, a right-hand branch of Potomac River in Morgan County.

**Gould**; post village in Clay County.

**Grace**; post village in Roane County on the Baltimore and Ohio Railroad.

**Grady**; post village in Wood County.

**Grafton**; county seat of Taylor County on the Baltimore and Ohio Railroad. Altitude, 997 feet. Population, 5,650.

**Graham Mines**; post village in Kanawha County.

**Graham Station**; post village in Mason County on the Baltimore and Ohio Railroad.

**Grand Camp**; run, a right-hand branch of French Creek, a tributary to Buckhannon River, in Upshur County.

**Grand Camp**; run, a small right-hand branch of Cedar Creek in Gilmer County.

**Granddaddy**; run, a left-hand branch of Left Fork of Steer Creek in Braxton County.

**Grandstaff**; run, a right-hand branch of Wheeling Creek in Marshall County.

**Grandview**; post village in Raleigh County.

**Grangeville**; village in Marion County.

**Granny**; creek, a right-hand tributary to Elk River in Braxton County.

**Grant**; county, situated in the northeastern part of the State. Its surface consists of a close alternation of ridges and valleys. It is traversed from northeast to northwest by branches of the Potomac, by which it is drained. Area, 483 square miles. Population, 7,275—white, 7,023; negro, 252; foreign born, 95. County

seat, Petersburg. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $40^{\circ}$  to  $50^{\circ}$ .

The county is traversed by the West Virginia Central and Pittsburg Railway.

**Grants**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Grantsville**; county seat of Calhoun County. Population, 225.

**Grape Island**; post village in Pleasants County, on the Baltimore and Ohio Railroad.

**Grapevine**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.

**Grapevine**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Grapevine**; branch, a right-hand branch of Fourpole Creek in Cabell County.

**Grapevine**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Grapevine**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Grapevine Knob**; summit in Kanawha County.

**Grass**; run, a left-hand branch of Little Kanawha River in Gilmer County.

**Grass**; run, a right-hand branch of Saltlick Creek in Braxton County.

**Grasshopper**; run, a right-hand branch of Potomac River in Morgan County.

**Grassland**; post village in Harrison County.

**Grass Lick**; head fork of left fork of Steer Creek in Braxton County.

**Grassy**; branch, a very small left-hand tributary to Bluestone River in Mercer County.

**Grassy**; creek, a left-hand tributary to Holly River in Webster County.

**Grassy**; creek, a small right-hand branch of Hominy Creek, a tributary to Gauley River, in Nicholas County.

**Grassy**; fork, a left-hand tributary to Big Sycamore Creek, a small branch of Elk River, in Clay County.

**Grassy**; fork, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.

**Grassy**; mountain, a summit west of North Branch of the Potomac in Pendleton County.

**Grassy**; run, a small right-hand tributary to Buckhannon River in Upshur County.

**Grassy**; run, a very small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.

**Grassy**; run, a small right-hand branch of Stewart Creek in Gilmer County.

**Grassy**; run, a small left-hand tributary to North River in Hampshire and Hardy counties.

**Grassy**; run, a left-hand branch of Prickett Run in Marion County.

**Grassy Knob**; summit in Greenbrier County. Elevation, 4,391 feet.

**Grassy Meadows**; post village in Greenbrier County.

**Graux**; post village in Roane County.

**Grave**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Raleigh County.

**Gravel Lick**; small right-hand branch of Morris Fork of Blue Creek, a tributary to Elk River, in Kanawha County.

**Gray**; run, a right-hand branch of Buffalo Creek in Marion County.

**Gray**; station in Logan County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.

**Graydon**; post village in Fayette County.

**Graysflat**; village in Marion County.

**Gray Sulphur**; springs, situated in Monroe County near Peterstown.

**Graysville**; post village in Marshall County on the Baltimore and Ohio Railroad.

- Great Backbone**; mountain, a narrow ridge in Tucker and Preston counties. Elevation, 2,500 to 3,500 feet.
- Great Cacapon**; post village in Morgan County on the Baltimore and Ohio Railroad.
- Great Flat Top**; mountain, a ridge extending along the boundary lines between McDowell, Wyoming, and Mercer counties.
- Great House**; branch, a very small right-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Great North**; (See Shenandoah Mountains.)
- Green**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Green**; valley in Stony Ridge, Mercer County.
- Greenbank**; post village in Pocahontas County.
- Green Bay**; branch, a very small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Greenbottom**; post village in Cabell County.
- Greenbrier**; county, situated in the southeastern part of the State. Area, 1,051 square miles. Population, 20,683—white, 18,854; negro, 1,829; foreign born, 121. County seat, Lewisburg. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Chesapeake and Ohio Railway.
- Greenbrier**; creek, a small left-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Greenbrier**; fork, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Greenbrier**; mountain, a ridge west of Greenbrier River in Greenbrier County. Elevation, 2,000 to 3,359 feet, the latter being the height of one peak.
- Greenbrier**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- Greenbrier**; river, a large right-hand branch of New River, entering it at Hinton.
- Greencastle**; post village in Wirt County.
- Greenhill**; post village in Wetzel County.
- Green Knob**; summit near the boundary line of Randolph and Pendleton counties. Elevation, 4,500 feet.
- Greenland**; post village in Grant County, situated on New Creek Mountain. Altitude, 1,443 feet.
- Greenland Gap**; height in New Creek Mountain, Grant County.
- Greenmont**; town in Monongalia County. Population, 349.
- Greens**; branch, a small right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Greens**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Green Shoal**; branch, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Greenshoal**; post village in Lincoln County.
- Greenspring**; post village in Hampshire County on the Baltimore and Ohio Railroad.
- Green Sulphur Springs**; post village in Summers County.
- Greenville**; post village in Monroe County.
- Greenwood**; post village in Doddridge County on the Baltimore and Ohio Railroad. Altitude, 880 feet.
- Gregg Knob**; summit in the Allegheny Mountains in Randolph County. Altitude, 4,310 feet.
- Greggs**; post village in Ohio County.
- Griffith**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Griffith**; creek, a small right-hand tributary to Greenbrier River in Summers County.

**Griffithsville**; post village in Lincoln County.

**Grimms Landing**; post village in Mason County.

**Grog**; run, a left-hand branch of Buffalo Creek in Brooke County.

**Groomer**; creek, a small left-hand tributary to Greenbrier River in Summers and Monroe counties.

**Groundhog**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.

**Grove**; creek, a left-hand branch of Elk River in Clay County.

**Grove**; post village in Doddridge County.

**Gulf**; branch, a small left-hand tributary to Rock Castle Creek, a branch of Guyandot River, in Wyoming County.

**Gunville**; post village in Mason County.

**Guseman**; post village in Preston County.

**Guy**; run, a small right-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.

**Guyandot**; mountain, a ridge of mountains in Raleigh and Wyoming counties.

**Guyandot**; river, a left-hand branch of Ohio River. It turns in the summit of the Allegheny Plateau and flows nearly northwest to its mouth at Huntington. It is navigable for 100 miles.

**Guyandotte**; town in Cabell County on the Baltimore and Ohio and the Chesapeake and Ohio railroads. Altitude, 558 feet. Population, 1,450.

**Guyses**; run, a right-hand branch of Tygarts Valley River in Marion County.

**Gwin Flats**; narrow summit in Webster County south of Cranberry River.

**Gwinn**; post village in Cabell County.

**Gwins**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.

**Gypsy**; post village in Harrison County on the Baltimore and Ohio Railroad.

**Hacker Camp**; run, a small left-hand tributary to Little Kanawha River in Lewis County.

**Hacker Valley**; post village in Webster County.

**Haddicks**; run, a small left-hand tributary to Shavers Fork of Cheat River in Tucker and Randolph counties.

**Hagans**; post village in Monongalia County.

**Haggle**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Haines Knob**; summit in the Alleghenies in Randolph County. Altitude, 4,130 feet.

**Hale**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.

**Hales**; branch, a small left-hand tributary to Five Mile Creek, a branch of East River, in Mercer County.

**Hall**; post village in Barbour County.

**Hall**; run, a right-hand tributary of Middle Wheeling Creek in Ohio County.

**Halleck**; post village in Monongalia County.

**Halls Mills**; post village in Wetzel County.

**Hallsville**; post village in McDowell County located on or near Tug Fork of Big Sandy River.

**Halltown**; post village in Jefferson County on the Baltimore and Ohio Railroad.

**Hambleton**; post village in Tucker County on the West Virginia Central and Pittsburgh Railway.

**Hambleton**; station in Grant County on the West Virginia Central and Pittsburgh Railway and on North Branch of Potomac River.

**Hamilton**; branch, a very small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.

- Hamilton**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Hamilton**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Hamlin**; county seat of Lincoln County.
- Hammer**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.
- Hammick**; fork, a small left-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Hammick Hill**; summit in Kanawha County.
- Hammond**; post village in Marion County on the Baltimore and Ohio Railroad.
- Hammond Ridge**; short spur of Big Ridge in Greenbrier County.
- Hampshire**; county, situated in the northeastern part of the State. It is traversed by Great Cacapon and Little Cacapon rivers and the South Branch of the Potomac. The surface consists mainly of an alternation of ridges and valleys, the former of no great height. The average elevation is not far from 1,000 feet. Area, 662 square miles. Population, 11,806—white, 11,344; negro, 461; foreign born, 51. County seat, Romney. The mean magnetic declination in 1900 was  $3^{\circ} 45'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $45^{\circ}$  to  $50^{\circ}$ . The county is traversed by the Baltimore and Ohio Railroad.
- Hamrick Knob**; summit in Webster County.
- Hamrick Ridge**; short spur separating Turkey Creek and Big Run, in Webster County.
- Hancock**; county, situated in the Panhandle, bordering on the Ohio River. Area, 86 square miles. Population, 6,693—white, 6,646; negro, 46; foreign born, 380. County seat, New Cumberland. The mean magnetic declination in 1900 was  $3^{\circ} 5'$ . The mean annual rainfall is 30 to 40 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Handley**; post village in Kanawha County on the Chesapeake and Ohio Railway. Altitude, 632 feet.
- Haney Hollow**; short right-hand tributary to Kanawha River, in Kanawha County.
- Hanging**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River, in Barbour County.
- Hanging Rock**; branch, a small right-hand tributary to North Fork of Cherry River, in Greenbrier County.
- Hanging Rock**; post village in Hampshire County on the Baltimore and Ohio Railroad.
- Hanging Rock**; summit at the junction of Nicholas, Webster, and Granbury counties.
- Hanging Rock Mills**; post village in Hardy County.
- Hannahsville**; post village in Tucker County.
- Hanover**; post village in Wyoming County.
- Hans**; creek, a small left-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Hardesty**; post village in Preston County.
- Harding**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.
- Hardman**; fork, a right-hand branch of Grass Run, in Gilmer County.
- Hard Scrabble**; summit at head of North Fork of the Potomac, in Pendleton County. Altitude, 4,500 feet.
- Hardway**; branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.

**Hardy**; county, situated in the northeastern part of the State. It is traversed by Lost River and South Branch of Potomac River. The surface consists of alternation ridges trending northeast and southwest. The elevation ranges from 800 to 3,000 feet. Area, 594 square miles. Population, 8,449—white, 7,992; negro, 457; foreign born, 23. County seat, Moorefield. The mean magnetic declination in 1900 was  $3^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $45^{\circ}$  to  $50^{\circ}$ .

**Hardy**; post village in Mercer County.

**Hardy**; run, a small right-hand branch of Wolf Creek, a tributary to Greenbrier River in Monroe County.

**Harewood**; post village in Fayette County on Kanawha River and on the Kanawha and Michigan Railway.

**Harker**; run, a left-hand branch of Long Drain in Wetzel County.

**Harless**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.

**Harman**; branch, a small left-hand tributary to Tug Fork of Big Sandy River, in McDowell County.

**Harman**; post village in Randolph County on the Dry Fork Railroad.

**Harmon**; branch, a small left-hand tributary to East River in Mercer County.

**Harmond**; creek; a small right-hand branch of Pocahontas River, a tributary to Kanawha River, in Putnam County.

**Harper**; branch, a small right-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.

**Harpers Ferry**; town in Jefferson County on the Baltimore and Ohio Railroad; population, 896.

**Harris**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River, in McDowell County.

**Harrison**; county, situated in the northwestern part of the State on the slope of the Alleghany Plateau, and drained northward by the Monongahela River. Area, 431 square miles. Population, 27,690—white, 26,435; negro, 1,252; foreign born, 821; county seat, Clarksburg. The mean magnetic declination in 1900 was  $2^{\circ} 45'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$ . The county is traversed by the Baltimore and Ohio Railroad.

**Harrison**; post village in Clay County on the West Virginia Central and Pittsburg Railway.

**Harrisville**; county seat of Ritchie County. Population, 472.

**Harrow Knob**; summit in Braxton County; elevation, 1,622 feet.

**Harry**; branch, a very small right-hand tributary to Guyandot River in Mingo County.

**Hart**; post village in Lincoln County on the Baltimore and Ohio Railroad.

**Hartford**; village in Mason County on the Baltimore and Ohio Railroad. Population, 515.

**Hartley**; post village in Ritchie County.

**Hartley**; run, a right-hand branch of Little Fishing Creek in Wetzel County.

**Hartmonsville**; post village in Mineral County.

**Harts**; run, a small left-hand branch of Howards Creek, a tributary to Greenbrier River, in Greenbrier County.

**Harvey**; creek, a right-hand branch of Trace Fork in Putnam and Lincoln counties.

**Harvey**; post village in Raleigh County on the Ohio Central Lines. Altitude, 2,030 feet.

**Harvey**; run, a left-hand branch of Paw Paw Creek in Marion and Monongalia counties.

**Hatcher**; post village in Mercer County.



- Hateful**; creek, a small left-hand tributary to Williams River, in Webster and Pocahontas counties.
- Hatfield**; branch, a small left-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Hatfield**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River, a branch of Ohio River, in Logan County.
- Hatfield**; post village in Mingo County.
- Hathaway**; post village in Calhoun County.
- Hawes**; run, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Haw Flat**; run, a small right-hand tributary to North Fork of Potomac River in Pendleton County.
- Hawflat Knob**; summit in Randolph County.
- Hawksnest**; town in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 827 feet. Population, 109.
- Haw Ridge**; summit at head of Buffalo Fork of Greenbrier River in Pocahontas County.
- Hayden**; post village in Preston County.
- Hayes**; gap in Pendleton County.
- Haymond**; post village in Nicholas County.
- Haynes**; branch, a right-hand branch of Twelvepole Creek in Wayne County.
- Haynes**; post village in Webster County.
- Hays**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Hazel**; post village in Wetzel County.
- Hazelgreen**; post village in Ritchie County.
- Hazelton**; post village in Preston County.
- Hazy**; gap in Raleigh County.
- Headsville**; post village in Mineral County.
- Heaters**; fork, a branch of Rocky Fork of Ellis Creek in Gilmer County.
- Heaters**; post village in Braxton County on the Baltimore and Ohio Railroad. Altitude, 853 feet.
- Heath**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Hebron**; post village in Pleasants County.
- Hecla**; post village in Raleigh County.
- Hedges**; mountain in Berkeley County. Elevation, 1,100 feet.
- Hedgesville**; post village in Berkeley County. Population, 342.
- Heights**; post village in Mason County.
- Heldreth**; post village in Doddridge County.
- Hell**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Barbour and Randolph counties.
- Helvetia**; post village in Randolph County.
- Hemlock**; post village in Upshur County on the Norfolk and Western Railway.
- Hemp Knob**; summit in Wayne County. Altitude, 1,190 feet.
- Hemp Patch**; run, a small left-hand branch of Fall Run, a tributary to Little Kanawha River, in Braxton County.
- Henderson**; village in Mason County on the Baltimore and Ohio Railroad. Population, 304.
- Hendricks**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.
- Hendricks**; post village in Tucker County. Population, 317.
- Henrietta**; post village in Calhoun County.



- Henry**; post village in Grant County on the West Virginia Central and Pittsburg Railway. Population, 339.
- Hensley Knob**; triangulation station in McDowell County.
- Herbert**; post village in Wayne County.
- Hereford**; post village in Jackson County.
- Hern**; post village in Mason County.
- Herndon**; post village in Wyoming County.
- Hernshaw**; post village in Kanawha County.
- Herold**; post village in Braxton County.
- Herring**; post village in Preston County.
- Hershman**; run, a small right-hand branch of Buckeye Fork of Little Skin Creek in Lewis County.
- Hettie**; post village in Braxton County.
- Hevener Knobs**; summits in Pocahontas County.
- Hewett**; creek, a small left-hand branch of Spruce Fork of Little Coal River in Boone and Logan counties.
- Hewett**; post village in Boone County. Altitude, 853 feet.
- Hewitt**; creek, a small right-hand tributary to Little Coal River, a branch of Coal Creek, in Boone County.
- Hibbs**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Hickman**; ridge in Webster County.
- Hickman**; run, a right-hand branch of Monongahela River in Marion County.
- Hickman**; run, a right-hand branch of Fish Creek in Marshall County.
- Hickory**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Hickory**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Fayette County.
- Hickory**; fork, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Hickory**; post village in Mason County.
- Hickory Camp**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Hickory Flat**; run, a small right-hand tributary to Buckhannon River in Upshur County.
- Hickory Knob**; summit in the Allegheny Front on the boundary line between Greenbrier County, W. Va., and Alleghany County, Va. Altitude, 3,357 feet.
- Hickory Knob**; summit in Gilmer County. Altitude, 1,570 feet.
- Hickory Knob**; summit in Kanawha County. Altitude, 1,450 feet.
- Hickory Knob**; summit in Putnam County.
- Hickory Lick**; small left-hand tributary to Greenbrier River in Pocahontas County.
- Hico**; post village in Fayette County.
- Hicumbotom**; post village in Kanawha County.
- Hidden Hollow**; short left-hand tributary to Elk River in Kanawha County.
- Higby**; post village in Roane County.
- Higginbotham**; run, a right-hand branch of Fish Creek in Marshall County.
- Higgins**; run, a right-hand tributary of Potomac River in Berkeley County.
- Higginsville**; post village in Hampshire County.
- High Knob**; one of the southernmost summits of Little Middle Mountain, in the Alleghenies in Randolph County. Altitude, 4,710 feet.
- High Knob**; summit in Braxton County. Altitude, 1,720 feet.
- High Knob**; summit in Nicholas County.
- High Knob**; summit of Mill Creek Mountain in Hardy and Hampshire counties.
- Highland**; mountain ridge in Morgan County. Elevation, 990 feet.

- Highland**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Highview**; post village in Hampshire County.
- Hill**; creek, a small left-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Hill**; post village in Boone County.
- Hillebert**; post village in Doddridge County.
- Hillsboro**; village in Pocahontas County. Population, 204.
- Hill Top**; town in Fayette County. Population, 263.
- Hinch**; post village in Mingo County.
- Hiner**; post village in Pendleton County.
- Hinkle**; branch, a very small right-hand tributary to Gauley River in Webster and Nicholas counties.
- Hinkle**; post village in Upshur County.
- Hinkleville**; post village in Upshur County.
- Hinton**; county seat of Summers County on the Chesapeake and Ohio Railway. Population, 3,763. Altitude, 1,372 feet.
- Hiram**; post village in Taylor County.
- Hite**; fork, an indirect left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Hoard**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Hodam**; mountain, a broken mountainous ridge in the central part of Webster County. Elevation, 2,000 to 2,500 feet.
- Hodge Knob**; summit of Paint Mountain on the boundary between Raleigh and Fayette counties.
- Hodges**; branch, a left-hand branch of Hurricane Creek in Putnam County.
- Hodges**; post village in Cabell County.
- Hodom**; post village in Webster County.
- Hog**; fork, a small right-hand branch of Tate Creek, a tributary to Elk River, in Braxton County.
- Hog**; run, a left-hand branch of Little Fishing Creek in Wetzel County.
- Hogback**; mountain ridge in Morgan County.
- Hog Camp**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Hogg**; post village in Putnam County.
- Hog Hollow**; small branch of Skin Creek, tributary to Monongahela River, in Lewis County.
- Hog Pen**; run, a small right-hand branch of Robinson Fork of Buffalo Creek, a tributary to Elk River, in Nicholas County.
- Hogsett**; post village in Mason County on the Baltimore and Ohio Railroad.
- Hogtan**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Holbrook**; post village in Ritchie County.
- Holcomb**; post village in Nicholas County.
- Hollidays Cove**; post village in Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway. Altitude, 719 feet.
- Holly**; post village in Braxton County on the Holly River and Addison Railway.
- Holly**; river, a right-hand branch of Elk River in Braxton County.
- Holly Bush**; fork, a very small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Hollygrove**; post village in Upshur County.
- Hollin**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Hollywood**; post village in Monroe County.
- Holman**; post village in Monongalia County.

- Holmes**; branch, a small left-hand branch of the Right Fork of Twomile Creek, a tributary to Kanawha River, in Kanawha County.
- Holmes Knob**; summit in Kanawha County. Altitude, 1,334 feet.
- Holt**; run, a small right-hand branch of Little Kanawha River in Gilmer County.
- Holton**; post village in Morgan County.
- Hominy**; creek, a left-hand tributary to Gauley River in Nicholas and Greenbrier counties.
- Hominyfalls**; post village in Nicholas County.
- Honey**; run, a right-hand branch of Little Fishing Creek in Wetzel County.
- Honey Camp**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Honey Camp**; run, a small right-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Upshur County.
- Honey Trace**; creek, a small left-hand branch of Milam Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Honsocket**; knob in Wetzel County.
- Hoodsville**; village in Marion County.
- Hookersville**; post village in Nicholas County. Altitude, 1,877 feet.
- Hooks Mills**; post village in Hampshire County.
- Hoover**; post village in Braxton County.
- Hope**; post village in Braxton County.
- Hopeville**; post village in Grant County, situated on North Fork of Potomac River.
- Hopkins**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Hopkins**; fork, a right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Hopkins**; mountain in Greenbrier County. Altitude, 3,356 feet.
- Horner**; fork, a right-hand branch of Big Laurel Creek, a tributary to Elk River, in Clay County.
- Horner**; post village in Lewis County.
- Horner**; run, a left-hand branch of Booths Creek in Harrison County.
- Horse**; branch, a very small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Horse**; creek, a left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Horse**; creek, a very small left-hand tributary to Guyandot River in Wyoming County.
- Horse**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Horse**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Horse**; creek, a very small right-hand branch of Paint Creek, a tributary to Kanawha River, in Fayette County.
- Horse**; fork, a small left-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha County.
- Horse**; fork, a very small left-hand tributary to New River in Summers County.
- Horse**; mountain ridge in Morgan County.
- Horse Camp**; run, a small right-hand tributary to Dry Fork of Cheat River in Randolph County.
- Horse Mill**; branch, a small right-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Horseneck**; post village in Pleasants County.
- Horsepen**; fork, a left-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

**Horse Pen**; ridge, mountains in Wyoming and Raleigh counties.

**Horse Ridge**; short spur east of Gauley River in Webster County.

**Horse Ridge**; short, curved spur between Cherry and Cranberry rivers in Nicholas County. Altitude, 2,500 feet.

**Horse Shoe**; run, a right-hand branch of Cheat River in Tucker and Preston counties.

**Horseshoe Run**; post village in Preston County.

**Horton**; post village in Randolph County on the Dry Fork Railroad.

**Hoult**; post village in Marion County on the Baltimore and Ohio Railroad.

**Hound**; fork, a very small left-hand tributary to Guyandot River in Wyoming County.

**House**; branch, a left-hand branch of Wolf Creek, a tributary to New River, in Fayette County.

**House Place**; branch, a very small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.

**Houston**; run, a small left-hand tributary to Elk River in Braxton and Webster counties.

**Hovatter**; post village in Tucker County.

**Howard**; fork, a right-hand branch of Rocky Fork of Pocatalico River, a tributary to Kanawha River, in Kanawha County.

**Howard**; post village in Marshall County on the Chesapeake and Ohio Railway.

**Howards**; creek, a left-hand branch of Greenbrier River in Greenbrier County. It is known locally as Jericho Draft at its head.

**Howards Lick**; left-hand tributary to Lost River in Hardy County.

**Howards Lick**; post village in Hardy County.

**Howell**; fork, a small right-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Upshur County.

**Howell**; post village in Cabell County.

**Howell**; run, a small right-hand tributary to North Branch of Potomac River in Mineral County.

**Howesville**; post village in Preston County on the West Virginia Northern Railroad.

**Hoyt**; post village in Roane County.

**Hubbard**; fork, a small right-hand tributary to Rock Creek, a branch of Little Coal River, in Boone County.

**Hubbardstown**; post village in Wayne County.

**Huddleston**; knob in Cabell County. Elevation, 1,021 feet.

**Hudson**; hollow, in Cabell County.

**Hudson**; post village in Preston County.

**Huey**; run, a right-hand branch of Buffalo Creek in Marion County.

**Huff**; broken mountainous country in Wyoming County, the highest peak reaching an altitude of 2,716 feet.

**Huff**; post village in Randolph County.

**Huff**; run, a right-hand branch of North Fork of Short Creek in Ohio County.

**Huff Knob**; summit of Flat Top Mountain on the boundary line between Mercer and Raleigh counties.

**Huffman**; post village in Barbour County.

**Huggins**; branch, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.

**Hughart**; post village in Greenbrier County.

**Hughes**; creek, a small right-hand tributary to Kanawha River in Kanawha County.

**Hughes**; fork, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.

**Hughes**; fork, a small right-hand tributary to Skin Creek in Lewis County.

- Hughes**; fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Kanawha County.
- Hughes**; river, a left-hand tributary to Ohio River, formed by two forks—North and South—in Ritchie and Wirt counties.
- Hughes**; run, a small right-hand tributary to Gauley River in Webster County.
- Hughes Knob**; summit in Lincoln County.
- Hugo**; post village in Putnam County.
- Hukiel**; run, a left-hand branch of Buffalo Run in Brooke County.
- Humphreys**; run, a very small left-hand tributary to Indian Creek a branch of New River, in Monroe County.
- Hundred**; town in Wetzel County on the Baltimore and Ohio Railroad. Population, 261.
- Hungry**; creek, a right-hand branch of Trace Creek in Lincoln County.
- Hunter**; post village in Mingo County.
- Hunters Springs**; post village in Monroe County.
- Huntersville**; post village in Pocahontas County.
- Huntsville**; post village in Jackson County.
- Hungards**; creek, a small right-hand tributary to Greenbrier River in Summers County.
- Hunter**; branch, a small right-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.
- Hunter**; branch, a small right-hand tributary to North Fork of Cherry River in Nicholas County.
- Hunter Place**; summit in Nicholas County. Altitude, 3,738 feet.
- Hunting**; creek, a small right-hand tributary to Cherry River, a branch of Gauley River, in Nicholas County.
- Hunting Camp**; run, a left-hand tributary to Spruce Run, a small branch of Cheat River, in Preston County.
- Hunting Ground**; broken, mountainous country in Pendleton County west of North Fork of the Potomac.
- Hunting Shirt**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River, in McDowell County.
- Huntington**; county seat of Cabell County on the Baltimore and Ohio Railroad and the Chesapeake and Ohio Railway. Altitude, 567 feet. Population, 11,923.
- Hunt Road**; run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Hur**; post village in Calhoun County.
- Hurricane**; branch, a small left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Hurricane**; branch, a very small left-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Hurricane**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Hurricane**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Hurricane**; branch, a small right-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Hurricane**; creek, a left-hand tributary to Kanawha River in Putnam County.
- Hurricane**; fork, a left-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.
- Hurricane**; village in Putnam County on the Chesapeake and Ohio Railway. Altitude, 687 feet. Population, 240.
- Hurricane Ridge**; mountains in Mercer County.

**Hurst**; post village in Lewis County.

**Husted**; creek, a right-hand tributary of Booths Creek in Taylor County.

**Hutchinson**; post village in Marion County on the Baltimore and Ohio Railroad.

**Hutchison**; branch, a very small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.

**Hutton**; run, a small left-hand tributary to South Branch of Potomac River in Hardy County.

**Huttons Knob**; summit of Cheat Mountain in Randolph County. Altitude, 4,260 feet.

**Huttonsville**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.

**Hyar**; run, a small left-hand tributary to Little Kanawha River in Braxton County.

**Hyer**; post village in Braxton County.

**Hypes**; post village in Fayette County.

**Iaeger**; post village in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.

**Ida**; post village in Putnam County.

**Ike Lick**; small left-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Nicholas County.

**Imans**; run, a small right-hand branch of South Mill Creek, a tributary to South Branch of Potomac River, in Grant County.

**Imboden**; post village in Fayette County.

**Improvement Lick**; small left-hand tributary to Greenbrier River in Pocahontas County.

**Incline**; post village in McDowell County.

**Independence**; post village in Preston County on the Baltimore and Ohio Railroad. Altitude, 1,156 feet.

**Indian**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.

**Indian**; creek, a left-hand tributary to Guyandot River in Wyoming County. It rises in Indian Ridge.

**Indian**; creek, a small left-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.

**Indian**; creek, a right-hand branch of New River in Summers and Monroe counties.

**Indian**; fork, a large left-hand branch of Sand Fork in Gilmer and Lewis counties.

**Indian**; fork, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell and Putnam counties.

**Indian**; gap in Raleigh County caused by Drews Creek.

**Indian**; gap at head of Spice Creek in McDowell County.

**Indian**; triangulation station in Indian Ridge on boundary line between Wyoming and McDowell counties.

**Indiancam**; post village in Upshur County.

**Indian Camp**; run, a small left-hand tributary to Buckhannon River, in Upshur County.

**Indian Draft**; small right-hand tributary to Greenbrier River in Pocahontas County.

**Indian Draft**; small right-hand branch of Indian Creek, a tributary to New River, in Monroe County.

**Indian Grave**; branch, a small right-hand tributary to Tug River in McDowell County.

**Indian Mills**; post village in Summers County.

**Indian Ridge**; mountains on boundary between Wyoming and McDowell counties.

**Industry**; post village in Calhoun County.

**Inez**; post village in Cabell County on the Chesapeake and Ohio Railway.

- Ingleside**; post village in Mercer County on the Norfolk and Western Railway and on East River. Altitude, 1,945 feet.
- Ingram**; branch, a very small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.
- Inkerman**; post village in Hardy County.
- Institute**; post village in Kanawha County.
- Inwood**; post village in Berkeley County on the Cumberland Valley Railroad.
- Iola**; post village in Roane County.
- Ira**; post village in Clay County.
- Ireland**; post village in Lewis County.
- Irewood**; creek, a small left-hand branch of Meadow River, a tributary to Gauley River, in Fayette County.
- Irona**; post village in Preston County.
- Irontown**; post village in Taylor County.
- Isaac**; run, a left-hand branch of Carney Fork of Rock Run in Wetzel County.
- Island**; creek, a small left-hand tributary to New River in Mercer and Summers counties.
- Island**; creek, a small left-hand tributary to Coal Creek, a branch of Kanawha River, in Lincoln County.
- Island**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Islandbranch**; post village in Kanawha County.
- Island Ford**; run, a small left-hand tributary to Greenbrier River, in Pocahontas County.
- Isners**; run, a small right-hand tributary to Valley River in Randolph County.
- Iuka**; post village in Tyler County.
- Ivanhoe**; post village in Upshur County.
- Ivy**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Ivy**; post village in Upshur County. Altitude, 3,593 feet.
- Ivy Knob**; triangulation station on boundary line between Raleigh and Wyoming counties. Altitude, 3,693 feet.
- Jack**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Jack**; mountain, a short ridge in Pendleton County. Elevation, 3,500 feet.
- Jack**; post village in Webster County.
- Jack**; run, a left-hand branch of Lost Run in Taylor County.
- Jackson**; branch, a very small left-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Jackson**; county, situated in the western part of the State, on the Allegheny Plateau, and bordering on the Ohio River. Area, 455 square miles. Population, 22,987—white, 22,872; negro, 115; foreign born, 91. County seat, Ripley. The mean magnetic declination in 1900 was 1° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River Railroad.
- Jackson**; fork, a small right-hand branch of Right Fork of Middle Fork of Tygarts Valley River in Upshur and Randolph counties.
- Jackson Ridge**; short spur in Pocahontas County.
- Jacksonville**; post village in Lewis County.
- Jacky**; fork, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Jaco**; post village in Monongalia County.
- Jacob**; fork, a right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.



- Jacob Cook**; branch, a very small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Jacox**; post village in Pocahontas County.
- Jacob Knob**; summit in Pocahontas County.
- Jake**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Jake**; run, a small right-hand branch of Ellis Creek in Gilmer County.
- Jake**; run, a left-hand tributary of Wheeling Creek in Marshall County.
- James**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- James**; creek, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- James Knob**; summit in Braxton County.
- Janelew**; post village in Lewis County on the West Virginia Central and Pittsburg Railway.
- Jarrell**; branch, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- Jarrett**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Jarrett**; post village in Kanawha County.
- Jarrolds Valley**; post village in Raleigh County.
- Jarvisville**; post village in Harrison County.
- Jasper Workman**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Jed**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Jefferson**; county, situated in the northeastern part of the State, limited on the east by Potomac River and the Blue Ridge. With the exception of the slopes of the Blue Ridge its surface is rolling, with an average altitude of about 500 feet. Area, 213 square miles. Population, 15,935—white, 11,994; negro, 3,941; foreign born, 96. County seat, Charlestown. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio and the Norfolk and Western railways.
- Jeffery**; post village in Boone County.
- Jehn**; branch, a small left-hand tributary to Millers Camp Branch, a fork of Marsh Fork of Coal River, in Raleigh County.
- Jenk**; fork, a small left-hand branch of Right Fork of Middle Fork of Tygarts Valley River in Upshur County.
- Jenkins**; fork, a small left-hand branch of Armstrong Creek, a tributary to Kanawha River, in Fayette County.
- Jenks**; post village in Lincoln County.
- Jennie**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Wayne and Logan counties.
- Jenny**; gap in Guyandot Mountain, caused by Skinner Fork, in Raleigh County.
- Jericho**; post village in Hampshire County.
- Jericho Draft**; the name applied locally to the headwaters of Howards Creek, a tributary to Greenbrier River, in Greenbrier County.
- Jerry**; fork, a very small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Jerry**; run, a right-hand branch of Simpson Creek in Taylor County.
- Jerrys Run**; post village in Wood County.
- Jersey**; run, a small left-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Webster County.

**Jerseywood**; run, a right-hand tributary to Ellis Creek in Gilmer County.

**Jesse**; post village in Wyoming County.

**Jetsville**; post village in Greenbrier County.

**Jigly**; branch, a small indirect right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.

**Jim**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Jim**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Jim**; branch, a very small right-hand tributary to Cooney Otter Creek, an indirect left-hand tributary to Guyandot River, in Wyoming County.

**Jim**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.

**Jim**; branch, a very small right-hand tributary to Slab Fork, a branch of Guyandot River, on boundary between Raleigh and Wyoming counties.

**Jimmy**; fork, a right-hand branch of Wilderness Fork of Fork Creek, a tributary to Coal River, in Boone County.

**Jim Spring**; run, a small right-hand tributary to Gauley River in Webster County.

**Jimtown**; post village in Harrison County.

**Job**; post village in Randolph County on the Dry Fork Railroad.

**Job**; run, a right-hand branch of Little Kanawha River in Gilmer County.

**Job Knob**; fork, a small right-hand branch of South Fork of Big Clear Creek, a tributary to Meadow River, in Greenbrier County.

**Job Knob**; summit in Greenbrier County. Altitude, 4,359 feet.

**Joblin**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Joe**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

**Joe**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Joe**; creek, a head fork of Williams Fork, a tributary to Trace Fork of Mud River, in Lincoln County.

**Joe**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Joe**; fork, a head fork of Right Fork of Steer Creek, in Braxton County.

**Joe**; run, a left-hand branch of Sand Fork in Gilmer County.

**Joe**; run, a right-hand branch of Buffalo Creek in Marion County.

**Joebranch**; post village in Wyoming County.

**Joe Hollow**; short left-hand tributary to Elk River in Kanawha County.

**Joe Knob**; summit in Greenbrier County. Altitude, 3,939 feet.

**Joel**; branch, a very small left-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Joel**; run, a small right-hand tributary to Gauley River in Webster County.

**Joe Ridge**; mountains in Raleigh County.

**Johithan**; run, a small left-hand tributary to Williams River in Webster County.

**John**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**John**; branch, a very small indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**John**; post village in Monongalia County.

**Johnniecake**; run, a left-hand branch of Pyles Fork of Buffalo Creek in Marion County.

**Johnnycake**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

- John O;** branch, a very small right-hand tributary to Laurel Branch, a tributary to Guyandot River, in Wyoming County.
- Johnson;** fork, a small left-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha County.
- Johnson;** fork, a small left-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.
- Johnson;** hollow in Monongalia County.
- Johnson;** post village in Barbour County.
- Johnson;** run, a small right-hand tributary to Gauley River in Webster County.
- Johnson Knob;** summit in Kanawha County. Altitude 2,200 feet.
- Johnsons Crossroads;** post village in Monroe County.
- Johnstown;** post village in Harrison County.
- Jones;** branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Jones;** fork, a very small right-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Jones;** post village in Putnam County.
- Jones;** run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Jones Springs;** post village in Berkeley County.
- Jordan;** creek, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Jordan;** post village in Kanawha County.
- Jordanrun;** post village in Grant County.
- Joseph Mills;** post village in Tyler County.
- Joshua;** creek, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Joshua;** run, a very small left-hand tributary to New River in Summers County.
- Josiah;** post village in Tyler County.
- Joy;** post village in Doddridge County.
- Joy;** run, a left-hand tributary of North Fork of Dunkard Creek in Monongalia County.
- Jud;** branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Judson;** post village in Summers County.
- Judyton;** post village in Greenbrier County.
- Jule Webb;** fork, a head fork of Horse Creek, a tributary to Little Coal River, in Boone County.
- Julia;** post village in Greenbrier County.
- Jumbo;** post village in Webster County.
- Jump;** branch, a small right-hand tributary to South Fork of Tug River in McDowell County.
- Jumping;** branch, a left-hand tributary to Little Bluestone Creek, a branch of Bluestone River, in Summers County.
- Jumping Branch;** post village in Summers County.
- Jumping Gut;** small left-hand tributary to Elk River in Clay County.
- Junction;** post village in Hampshire County.
- Junior;** town in Barbour County on the West Virginia Central and Pittsburg Railway. Population, 335.
- Kabletown;** post village in Jefferson County.
- Kalamazoo;** post village in Barbour County.
- Kanawha;** county, situated in the western part of the State, on the Allegheny Plateau. It is here deeply dissected. It is traversed by Kanawha River, which, with its branches, the principal of which are Coal Creek and Elk River, drains its area. Area, 872 square miles. Population, 54,696—white, 50,711; negro,

3,983; foreign born, 744. County seat, Charleston. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Charleston, Clendennin and Sutton, the Chesapeake and Ohio, the Ohio Central Lines, and the Kanawha and Michigan railways.

**Kanawha**; fork, a small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.

**Kanawha**; river, a large left-hand branch of Ohio River, heading, under the name of New River, in western North Carolina, and flowing north and northwest to its mouth opposite Gallipolis. Its chief branches are Gauley and Elk rivers, the former joining it at Kanawha Falls and the latter at Charleston. The drainage area, including New River, is 16,690 square miles. Length, 400 miles. Navigable to Kanawha Falls.

**Kanawha**; run, a right-hand branch of Holly River, a tributary to Elk River, in Braxton County.

**Kanawha City**; post village in Kanawha County on the Chesapeake and Ohio Railway.

**Kanawha Falls**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio and the Ohio Central railroads. Altitude, 665 feet.

**Kanawha Head**; post village in Upshur County.

**Kanawha Station**; post village in Wood County. Altitude, 611 feet.

**Karn**; post village in Monroe County.

**Kasson**; post village in Barbour County.

**Kate Knob**; summit in Lincoln County.

**Kates**; branch, a very small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.

**Kates**; mountain, a ridge in Greenbrier County. Altitude, 2,500 to 3,000 feet.

**Katly**; village in Marion County.

**Katyslick**; village in Harrison County.

**Kausooth**; post village in Marshall County.

**Kearneysville**; post village in Jefferson County. Altitude, 589 feet.

**Kedron**; post village in Upshur County.

**Keenan**; post village in Monroe County.

**Keenan**; branch, a very small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.

**Keeney**; creek, a small right-hand tributary to New River in Fayette County.

**Keeney**; mountain, a ridge in Summers County north of Greenbrier River. Elevation, 2,000 to 3,500 feet.

**Keeney**; creek, a small right-hand tributary to New River in Fayette County.

**Keeney Knob**; summit of Keeney Mountain in Summers County. Altitude, 3,945 feet.

**Kegley**; post village in Mercer County.

**Keith**; fork, a small left-hand tributary to Skin Creek in Lewis County.

**Keith**; post village in Fayette County.

**Keller**; post village in Jefferson County.

**Kelleys**; creek, a small left-hand tributary to Greenbrier River in Summers and Monroe counties.

**Kellogg**; post village in Wayne County on the Chesapeake and Ohio Railway.

**Kelly**; creek, a very small right-hand branch of Pocotaligo River, a tributary to Kanawha River, in Putnam County.

**Kelly**; creek, a right-hand tributary to Kanawha River in Kanawha County.

**Kelly**; post village in Doddridge County.

**Kelley Knob**; summit in Randolph County.

**Kendalia**; post village in Kanawha County.

**Kenna**; post village in Jackson County.

**Kenna Ridge**; mountains in the southwestern part of Braxton County, ranging in elevation from 1,000 to 1,600 feet.

**Kennison**; mountain, a short ridge in the western part of Pocahontas County. Elevation, 3,500 to 4,000 feet.

**Kenova**; village in Wayne County on the Baltimore and Ohio, the Chesapeake and Ohio, and the Norfolk and Western railways. Altitude, 581 feet. Population, 863.

**Kenton**; post village in Doddridge County.

**Kentuck**; fork, a very small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.

**Kentuck**; post village in Jackson County.

**Kerens**; post village in Randolph County on the West Virginia Central and Pittsburgh Railway.

**Kerless Knob**; summit in Greenbrier County. Altitude, 3,441 feet.

**Kern**; run, a small stream in Lewis County.

**Keslers Crosslanes**; post village in Nicholas County.

**Kester**; post village in Roane County.

**Ketterman**; post village in Grant County, located on South Branch of Potomac River.

**Kettle**; post village in Roane County.

**Kettle**; run, a small right-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Kueths**; run, a right-hand branch of Fall Run in Braxton County.

**Kewee**; creek, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Key**; run, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Keyser**; town and county seat of Mineral County on the Baltimore and Ohio and the West Virginia Central and Pittsburgh railroads. Altitude, 802 feet. Population, 2,536.

**Keystone**; town in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek. Population, 1,088.

**Kiah**; fork, a right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Kiahsville**; post village in Wayne County.

**Kidwell**; post village in Tyler County.

**Kieffer**; post village in Greenbrier County.

**Kile Knob**; summit in Pendleton County.

**Kilgore**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Kimball**; station in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek.

**Kimlin**; run, a left-hand branch of Buffalo Creek in Brooke County.

**Kimsey**; run, a left-hand tributary to Lost River in Hardy County.

**Kincaid**; knob in Marion County.

**Kincaid**; post village in Fayette County.

**Kincaid**; run, a small left-hand tributary to Greenbrier River in Greenbrier County.

**King**; post village in Wetzel County.

**Kings**; run, a small right-hand tributary to Valley River in Randolph County.

**Kingsbury**; post village in Wood County.

**King Shoal**; branch, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Kingsville**; post village in Randolph County.

- Kingwood**; town and county seat of Preston County on the West Virginia Northern Railroad. Altitude, 1,778 feet. Population, 700.
- Kirby**; post village in Hampshire County.
- Kirt**; post village in Barbour County.
- Kline**; gap in New Creek Mountain caused by New Creek in Grant County.
- Kline**; post village in Pendleton County.
- Knapp**; creek, a left-hand tributary to Greenbrier River in Pocahontas County.
- Knawl**; post village in Braxton County.
- Knight**; post village in Doddridge County.
- Knob**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Knob**; fork, a very small right-hand tributary to Clear Fork, a branch of the Guyan-dot River, in Wyoming County.
- Knob**; fork, a left-hand branch of Middle Wheeling Creek in Ohio County.
- Knobley**; post village in Mineral County.
- Knobly**; mountain, a long narrow ridge in Grant and Mineral counties. Altitude, 1,500 feet.
- Knottsville**; post village in Taylor County.
- Knoxville**; post village in Marshall County.
- Kodol**; post village in Wetzel County.
- Krise**; post village in Fayette County.
- Kyger**; post village in Roane County on the Baltimore and Ohio Railroad.
- Kyle**; post village in McDowell County on the Norfolk and Western Railway.
- Lacey**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Laclede**; post village in Cabell County.
- Ladley**; run, a left-hand branch of Middle Wheeling Creek in Ohio County.
- Lahmansville**; post village in Grant County.
- Lake**; post village in Logan County.
- Lambert**; branch, a small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Lambert**; creek, a very small right-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Lambert**; branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- Lamont**; post village in Marshall County.
- Lanark**; post village in Raleigh County.
- Landes**; post village in Grant County.
- Landgraff**; post village in McDowell County on the Norfolk and Western Railway.
- Lane**; post village in Mason County.
- Lanes Bottom**; post village in Webster County.
- Lanham**; post village in Putnam County.
- Lankey**; mountain, a short ridge west of South Branch of Potomac River in Pendleton County.
- Lansing**; post village in Fayette County.
- Lantz**; post village in Barbour County.
- Larew**; post village in Taylor County.
- Larkin Hollow**; right-hand tributary to Kanawha River in Kanawha County.
- Lashmeet**; post village in Mercer County, located near Bluestone River on Delashmeet Creek. Altitude, 2,588 feet.
- Latonia**; post village in Gilmer County.
- Lattimer**; post village in Roane County.
- Launa**; post village in Raleigh County.



- Laurel**; branch, a small left-hand tributary to Marrowbone Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Laurel**; branch, a small left-hand tributary to South Fork of Tug River in McDowell County.
- Laurel**; branch, a small left-hand tributary to Bluestone River, a branch of New River, in Mercer County.
- Laurel**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Laurel**; branch, a small left-hand tributary to Millers Camp Branch, a branch of Marsh Fork of Coal River, in Raleigh County.
- Laurel**; branch, a very small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Laurel**; branch, a left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Laurel**; branch, a left-hand branch of Left Fork of Armstrong Creek, a tributary of Kanawha River, in Fayette County.
- Laurel**; branch, a very small right-hand tributary to Guyandot River in Logan County.
- Laurel**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Laurel**; branch, a very small right-hand tributary to Bluestone River in Mercer County.
- Laurel**; branch, a small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Laurel**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Laurel**; branch, a small right-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.
- Laurel**; branch, a very small right-hand tributary to Powellton Fork of Armstrong Creek, a branch of Kanawha River, in Fayette County.
- Laurel**; creek, a small right-hand tributary to Middle Fork of Tygarts Valley River in Randolph County.
- Laurel**; creek, a left-hand branch of Coal River, a tributary to Kanawha River, in Boone County.
- Laurel**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Laurel**; creek, a left-hand tributary to New River in Fayette County.
- Laurel**; creek, a small left-hand tributary to Greenbrier River in Greenbrier County.
- Laurel**; creek, a small left-hand branch of Knapp Creek, a tributary to Greenbrier River, in Pocahontas County.
- Laurel**; creek, a small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Laurel**; creek, a left-hand tributary to Elk River in Braxton and Webster counties.
- Laurel**; creek, a small right-hand tributary to New River in Summers County.
- Laurel**; creek, a small right-hand tributary to Williams River in Pocahontas County.
- Laurel**; creek, a small right-hand tributary to Gauley River in Webster County.
- Laurel**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Laurel**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Laurel**; creek, a right-hand branch of Big Ugly Creek, a tributary to Guyandot River, in Lincoln County.
- Laurel**; creek, a small right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.



- Laurel;** creek, a small right-hand tributary to Gauley River, a large branch of Kanawha River, in Nicholas County.
- Laurel;** creek, a small right-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Laurel;** creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Greenbrier County.
- Laurel;** creek, a small right-hand branch of Brush Creek, a tributary to Bluestone River, in Mercer County.
- Laurel;** creek, a small right-hand tributary to New River in Fayette County.
- Laurel;** creek, a right-hand tributary to Valley River in Barbour County.
- Laurel;** creek, a right-hand tributary to Indian Creek, a branch of New River, in Monroe County.
- Laurel;** fork, a head fork of Holly River in Webster County.
- Laurel;** fork, a head fork of Williams Fork, a branch of Trace Fork of Mud River, in Lincoln County.
- Laurel;** fork, a left-hand branch of Horse Creek, a tributary to Little Coal River, in Lincoln County.
- Laurel;** fork, a small left-hand branch of Big Creek, a tributary to Mud River, in Lincoln County.
- Laurel;** fork, a small left-hand tributary to Elk River in Pocahontas County.
- Laurel;** fork, a small left-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay County.
- Laurel;** fork, a small left-hand branch of Big Sycamore Creek, a tributary to Elk River, in Clay County.
- Laurel;** fork, a left-hand branch of Right Fork of Peters Creek, a tributary to Gauley River, in Nicholas County.
- Laurel;** fork, a small left-hand branch of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Laurel;** fork, a small left-hand tributary to Long Bottom Creek, a branch of Cabin Creek, in Kanawha County.
- Laurel;** fork, an indirect left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Laurel;** fork, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Laurel;** fork, a small left-hand branch of Granny Creek in Braxton County.
- Laurel;** fork, a left-hand branch of Grove Creek in Clay County.
- Laurel;** fork, a large left-hand branch of Dry Fork, a head fork of Cheat River, in Randolph County.
- Laurel;** fork, a right-hand branch of Sand Creek, a tributary to Guyandot River, in Lincoln County.
- Laurel;** fork, a small right-hand branch of Little Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Laurel;** fork, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Laurel;** fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Laurel;** fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Kanawha County.
- Laurel;** fork, a right-hand branch of Coal Fork of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Laurel;** fork, a right-hand branch of Spruce Fork of Little Coal River in Boone and Logan counties.
- Laurel;** fork, a small right-hand tributary to Birch River, a branch of Elk River, in Webster County.

- Laurel**; fork, a right-hand branch of Tanner Fork and tributary to Little Kanawha River in Gilmer County.
- Laurel**; fork, a small right-hand tributary to Pigeon Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Laurel**; fork, a right-hand tributary to French Creek in Upshur County.
- Laurel**; hill, a ridge separating Cheat and Valley rivers. Altitude, 3,000 feet.
- Laurel**; hills, a long, narrow ridge in Preston, Barbour, and Tucker counties. Altitude, 2,000 to 2,500 feet.
- Laurel**; post village in Barbour County.
- Laurel**; run, a small left-hand tributary to Little Kanawha River in Upshur County.
- Laurel**; run, a small left-hand tributary to the Middle Fork of Tygarts Valley River in Upshur County.
- Laurel**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Laurel**; run, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Laurel**; run, a small left-hand tributary to Little Kanawha River in Braxton County.
- Laurel**; run, a small left-hand tributary to Meadow Creek in the western part of Greenbrier County.
- Laurel**; run, a small left-hand tributary to Little Birch River in Braxton County.
- Laurel**; run, a small right-hand branch of Duck Creek, a right-hand tributary to Elk River, in Braxton County.
- Laurel**; run, a small right-hand tributary to Dry Fork of Cheat River in Tucker County.
- Laurel**; run, a small right-hand tributary to West Fork of Monongahela River in Lewis County.
- Laurel**; run, a small right-hand tributary to Williams River in Webster County.
- Laurel**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Laurel**; run, a small branch of Youghiogheny River in Preston County.
- Laurel Branch**; post village in Monroe County.
- Laureldale**; post village in Mineral County. Altitude, 1,326 feet.
- Laurel Patch**; run, a right-hand branch of Left Fork of Holly River in Braxton County.
- Lavalette**; post village in Wayne County on the Norfolk and Western Railway.
- Lavender**; fork, a small right-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Lavinia**; fork, a small left-hand branch of Hopkins Fork of Laurel Creek, tributary to Coal River, in Boone County.
- Lawford**; post village in Ritchie County.
- Lawson**; post village in Raleigh County. Altitude, 1,055 feet.
- Lawton**; post village in Fayette County.
- Laywell**; branch, a right-hand tributary to Trace Fork in Putnam County.
- Lazearville**; post village in Brooke County on the Pennsylvania Railroad.
- Leachtown**; post village in Wood County.
- Leading**; creek, a right-hand branch of Little Kanawha River in Gilmer County.
- Leading**; creek, a small right-hand tributary to Valley River in Randolph County.
- Leading Creek**; post village in Lewis County.
- Leadmine**; post village in Tucker County.
- League**; post village in Ritchie County.
- Leander**; post village in Fayette County.
- Leatherbark**; run, a left-hand branch of Cedar Creek in Gilmer County.
- Leather Bark**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.

- Leatherwood**; creek, a left-hand tributary to Elk River in Clay, Nicholas, and Kanawha counties.
- Leatherwood**; creek, a small right-hand tributary to Guyandot River in Mingo County.
- Leatherwood**; fork, a left-hand tributary to Elk River in Webster County.
- Leatherwood**; town in Ohio County. Population, 123.
- Lecta**; post village in Wirt County.
- Lee**; branch, a very small left-hand tributary to Kanawha River in Fayette County.
- Lee**; creek, a right-hand tributary to Indian Fork of Mud River in Cabell County.
- Lee**; post village in Wirt County.
- Leebell**; post village in Randolph County.
- Leetown**; post village in Jefferson County.
- Leewood**; post village in Kanawha County.
- Lefthand**; post village in Roane County.
- Legg**; post village in Kanawha County.
- Lehew**; post village in Hampshire County.
- Leiter**; post village in Randolph County on the Roaring Creek and Belington Railroad.
- Leivasy**; post village in Nicholas County.
- Lem**; fork, a very small right-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.
- Lenox**; post village in Preston County.
- Lens**; creek, a left-hand tributary to Kanawha River in Kanawha County.
- Leo**; post village in Roane County.
- Leon**; village in Mason County on the Ohio Central Lines. Population, 250.
- Leonard**; fork, a small left-hand tributary to Right Fork of Middle Fork of Tygarts Valley River in Upshur County.
- Leonard**; post village in Greenbrier County.
- Leopard**; run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.
- Leopold**; post village in Doddridge County.
- Lerona**; post village in Mercer County.
- Leroy**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Lesage**; post village in Cabell County on the Baltimore and Ohio Railroad.
- Leslie**; branch, a small right-hand tributary to Trg Fork of Big Sandy River in McDowell County.
- Lester**; post village in Raleigh County.
- Letart**; post village in Mason County on the Baltimore and Ohio Railroad.
- Letch**; post village in Braxton County.
- Letherbark**; post village in Calhoun County.
- Lettergap**; post village in Gilmer County.
- Levels**; post village in Hampshire County.
- Levissee**; creek, a right-hand branch of Wolf Creek, a tributary to New River, in Fayette County.
- Lewis**; county, situated in the central part of the State, on the Allegheny Plateau, drained northward by tributaries of the Monongahela. Area, 414 square miles. Population, 16,980—white, 16,792; negro, 178; foreign born, 265. County seat, Weston. The mean magnetic declination in 1900 was 2° 45'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Lewis**; fork, a very small left-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Lewis**; post village in Harrison County.
- Lewis**; run, a small right-hand tributary to Tygarts Valley River, in Barbour County.

**Lewisburg**; county seat of Greenbrier County. Population, 872.

**Lewis Queen**; branch, a small left-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.

**Lewiston**; post village in Kanawha County.

**Liberty**; post village in Putnam County.

**Lick**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Lick**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Lick**; branch, a small left-hand tributary to Fourteenmile Creek, a branch of Guyandot River, in Lincoln County.

**Lick**; branch, a left-hand branch of Open Fork of Bell Creek, a tributary to Gauley River, in Nicholas County.

**Lick**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.

**Lick**; branch, a very small left-hand tributary to Brier Creek, a branch of Coal River, in Kanawha County.

**Lick**; branch, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.

**Lick**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Lick**; branch, a small right-hand tributary to Pond Fork of Little Coal River in Boone County.

**Lick**; branch, a small right-hand tributary to Cranberry River in Webster County.

**Lick**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Lick**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Lick**; branch, a very small right-hand tributary to Bluestone River in Mercer County.

**Lick**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.

**Lick**; branch, a very small right-hand tributary to South Fork of Elkhorn Creek in McDowell County.

**Lick**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.

**Lick**; creek, a small left-hand tributary to Laurel Creek in Braxton County.

**Lick**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.

**Lick**; creek, a small left-hand tributary to New River in Mercer and Summers counties.

**Lick**; creek, a small right-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Putnam County.

**Lick**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.

**Lick**; creek, a small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Lick**; creek, a small right-hand tributary to New River in Summers County.

**Lick**; fork, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Lick**; fork, a left-hand tributary to Grass Run in Gilmer County.

**Lick**; fork, a small right-hand branch of Mossy Creek, a tributary to Paint Creek, in Fayette County.

**Lick**; fork, a small right-hand tributary to Steer Run in Gilmer County.

**Lick**; mountain, a short spur in Greenbrier County.

**Lick**; run, a small left-hand tributary to Cheat River, in Preston County.

**Lick**; run, a small right-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.

**Lick**; run, a right-hand tributary to South Fork of Potomac River in Pendleton County.

**Lick Hollow**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Lick Hollow**; creek, a small right-hand tributary to Little Creek, a branch of Anthony's Creek, in Greenbrier County.

**Licking**; creek, a small left-hand tributary to Cheat River in Tucker County.

**Lick Knob**; triangulation station situated on Paint Mountain, on boundary line between Raleigh and Fayette counties. Altitude, 3,268 feet.

**Licklog**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Lightburn**; post village in Lewis County.

**Lile**; post village in Greenbrier County.

**Lilly**; branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.

**Lilly**; fork, a left-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.

**Lilly**; post village in Summers County.

**Lillydale**; post village in Monroe County.

**Lima**; post village in Tyler County.

**Limestone**; branch, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.

**Limestone**; mountain, a short ridge in Tucker County. Altitude, 1,500 to 3,000 feet.

**Limestone**; post village in Marshall County.

**Limestone**; run, a small right-hand tributary to O'Brien Fork in Braxton County.

**Lincoln**; county, situated in the western part of the State on the lower slopes of the Allegheny Plateau and drained by tributaries of Guyandot River. Area, 441 square miles. Population, 15,434—white, 15,371; negro, 63; foreign born, 7. County seat, Hamlin. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°.

**Lincoln**; post village in Wyoming County.

**Linden**; post village in Roane County.

**Lindside**; post village in Monroe County.

**Line**; creek, a small right-hand branch of Peters Creek, a tributary to Gauley River, in Nicholas County.

**Link**; post village in Braxton County.

**Linn**; post village in Gilmer County.

**Linwood**; post village in Pocahontas County.

**Lisle**; branch, a left-hand branch of Guyandot River in Cabell County.

**Little**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Little**; creek, a small left-hand branch of Slaughter Creek, a tributary to Kanawha River, in Kanawha County.

**Little**; creek, a left-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.

**Little**; creek, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.

- Little**; creek, a right-hand branch of Anthony Creek, a tributary to Greenbrier River, in Greenbrier County.
- Little**; creek, a right-hand branch of North Fork of Tug River in McDowell County.
- Little**; fork, a small left-hand branch of Meadow Creek, a tributary to Meadow River, in Greenbrier County.
- Little**; fork, a small left-hand tributary to Williams River in Webster County.
- Little**; fork, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Little**; fork, a very small right-hand tributary to South Fork of Elkhorn Creek, in McDowell and Mercer counties.
- Little**; mountain, a short ridge in Monroe County. Altitude, 2,500 feet.
- Little**; mountain, a short ridge between North Fork of Greenbrier River and Greenbrier River in Pocahontas County. Altitude, 3,000 feet.
- Little**; mountain, a ridge in Monroe County.
- Little**; mountain, a short spur of Big Mountain, west of South Branch of Potomac River, in Pendleton County.
- Little**; mountain, a short spur of New Creek Mountains in Grant County. Altitude, 1,500 to 2,000 feet.
- Little**; mountain, a short ridge in Monroe County. Altitude, 2,000 feet.
- Little**; post village in Tyler County.
- Little**; river, a left-hand tributary to East Fork of Greenbrier River in Pocahontas County.
- Little**; river, a small left-hand branch of West Fork of Greenbrier River in Randolph County.
- Little Beaver**; creek, a right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Little Beech**; mountain, a short ridge east of Shavers Mountain, between East and West forks of Glady Fork, in Randolph County.
- Little Beech Knob**; summit in Greenbrier County.
- Little Beechy**; creek, a very small left-hand tributary to Elk River in Clay County.
- Little Beechy**; run, a small left-hand tributary to Williams River in Webster County.
- Littlebirch**; post village in Braxton County.
- Little Birch**; river, a right-hand branch of Birch River in Braxton and Webster counties.
- Little Black**; fork, a small right-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Little Blackwater**; river, a small right-hand branch of Blackwater River in Tucker County.
- Little Bluestone**; creek, a small left-hand tributary to Bluestone River, a branch of New River, in Summers County.
- Little Brier**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.
- Little Briery Knob**; summit in Nicholas County.
- Little Buffalo**; creek, a small left-hand tributary to Elk River in Braxton County.
- Little Buffalo**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Little Buffalo**; creek, a left-hand branch of Big Buffalo River in Preston County.
- Little Cabell**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Little Cacapon**; river, a left-hand tributary to North Branch of Potomac River in Hampshire County.
- Little Clear**; creek, a right-hand branch of Meadow River in Greenbrier County.



- Little Clear Creek**; mountain, a ridge between Big Clear Creek and Little Clear Creek in Greenbrier County.
- Little Coal**; run, a large left-hand branch of Coal River, a tributary to Kanawha River, in Lincoln and Boone counties.
- Little Crooked**; run, a small left-hand tributary to Cedar Creek in Gilmer County.
- Little Cub**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Little Cub**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Wyoming County.
- Little Day Camp**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Little Dents**; run, a left-hand tributary of Buffalo Creek in Marion County.
- Little Devil**; creek, a small right-hand tributary to Second Creek, a branch of Greenbrier River, in Monroe County.
- Little Dry**; run, a small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Little Dunkard Mill**; creek, a left-hand tributary to Buffalo Creek.
- Little Elk**; creek, a small right-hand tributary to Gauley River, a large branch of Kanawha River in Nicholas County.
- Little Ellis**; creek, a left-hand branch of Ellis Creek in Gilmer County.
- Littlefalls**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Little Fishing**; creek, a small left-hand branch of Ohio River in Wetzel County.
- Little Fudger**; creek, a right-hand branch of Fudger Creek, a tributary to Mud River, in Cabell County.
- Little Gauley**; mountains, a long, narrow, broken ridge in Kanawha and Fayette counties. Altitude 1,500 feet.
- Little Hart**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Little Hewitt**; creek, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Little High Knob**; summit in Pocahontas County.
- Little Horse**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Little Huff**; creek, a left-hand tributary to Guyandot River, a branch of Ohio River, in Wyoming County.
- Little Hurricane**; creek, a small left-hand tributary to Kanawha River in Putnam County.
- Little Indian**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Little Jarrell**; fork, a small left-hand branch of Big Jarrell Fork, a tributary to Hopkins Fork of Coal River, in Boone County.
- Little Jenny**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Little Jonathan**; run, a small left-hand tributary to Cheat River in Tucker County.
- Little Kanawha**; river, a left-hand branch of Ohio River, rising in Upshur County and flowing northwest through Calhoun, Wirt, and Wood counties. It is navigable to Glenville.
- Little Knob**; summit in Greenbrier County.
- Little Laurel**; creek, a small left-hand tributary to Cherry River, a branch of Gauley River, in Nicholas and Greenbrier counties.
- Little Laurel**; creek, a small right-hand branch of Laurel Creek, a tributary to Coal River, in Boone County.
- Little Laurel**; creek, a small right-hand branch of Kiah Fork of Twelvepole Creek in Wayne County.



- Little Laurel;** creek, a small right-hand tributary to Williams River in Pocahontas County.
- Little Laurel;** creek, an indirect right-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.
- Little Laurel;** creek, a very small right-hand tributary to Brush Creek, a branch of Bluestone River, in Mercer County.
- Little Laurel;** run, a left-hand branch of Buffalo Creek in Marion County.
- Little Laurel;** run, a very small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Little Laurel;** run, a left-hand tributary to Fish Creek in Wetzel and Marshall counties.
- Little Locust Knob;** summit in Webster County.
- Little Lynn;** creek, a small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Little Marsh;** fork, a small right-hand branch of Marsh Fork, the left-hand head fork of Coal River, in Raleigh County.
- Little Middle;** mountain, a short ridge between Gandy Creek and Dry Fork of Cheat River in Randolph County.
- Little Milam;** creek, a small right-hand branch of Milam Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.
- Little Mod;** run, a right-hand branch of Buffalo Creek in Marion County.
- Little Naul;** creek, a left-hand branch of Naul Creek in Braxton County.
- Little Ninemile;** fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Little Otter;** creek, a small right-hand branch of Elk River in Braxton County.
- Littleotter;** post village in Braxton County.
- Little Paw Paw;** creek, left-hand tributary to Monongahela River, in Mineral County.
- Little Ridge;** short range of mountains in Greenbrier County.
- Little Right;** fork, a very small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Little Rush;** run, a right-hand tributary to Fish Creek in Wetzel County.
- Little Sand;** run, a small right-hand tributary to Buckhannon River in Upshur County.
- Little Sandy;** creek, a small right-hand branch of Elk River in Kanawha County.
- Little Sandy;** creek, a right-hand branch of Big Sandy Creek in Preston County.
- Littlesburg;** post village in Mercer County.
- Little Sevenmile;** creek, a small left-hand branch of Sevenmile Creek, a tributary to Ohio River, in Cabell County.
- Little Sewell;** creek, a small left-hand tributary to Meadow River in Greenbrier County.
- Little Sewell;** mountain, a short broken mountainous country in the western part of Greenbrier County. Altitude, 3,000 feet.
- Little Sewell Mountain;** post village in Greenbrier County.
- Little Skin;** creek, a right-hand branch of Skin Creek in Lewis County.
- Little Slate;** creek, a left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Little Spruce;** summit in Pocahontas County.
- Little Spruce Knob;** summit in Pocahontas County. Altitude, 4,360 feet.
- Little Staunch;** branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Little Stony;** creek, a very small left-hand tributary to New River in Fayette County.

- Little Sugar**; creek, a right-hand branch of Sugar Creek, a tributary to Back Fork of Elk River, in Webster and Randolph counties.
- Little Sycamore**; creek, a very small left-hand tributary to Elk River in Clay County.
- Little Twomile**; creek, a right-hand branch of Mud River in Cabell County.
- Little Ten Mile**; creek, a small left-hand tributary to Monongahela River in Harrison County.
- Littleton**; town in Wetzel County on the Baltimore and Ohio Railroad. Altitude, 930 feet. Population, 509.
- Little Twomile**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Little Ugly**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Little Wheeling**; creek, a right-hand branch of Wheeling Creek in Ohio County.
- Little Whetstone**; run, a right-hand tributary of Buffalo Creek in Marion County.
- Little Whiteoak**; creek, a small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.
- Little Whiteoak**; creek, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Little Whitestick**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Little Wolf**; creek, a small right-hand tributary to Cheat River in Preston County.
- Liverpool**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Lizard**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Lizemores**; post village in Clay County.
- Lizzie**; post village in Jackson County.
- Llewellyn**; run, a left-hand tributary of Pyles Fork of Buffalo Creek in Marion County.
- Lloyd**; post village in Randolph County on the Baltimore and Ohio Railroad.
- Lloydsville**; post village in Braxton County.
- Lobelia**; post village in Pocahontas County.
- Locke**; post village in Tyler County.
- Lockhart**; post village in Jackson County.
- Lockharts Run**; post village in Wood County.
- Lockney**; post village in Gilmer County.
- Lock Seven**; post village in Kanawha County on the Ohio Central Lines.
- Lockwood**; post village in Nicholas County.
- Locust**; fork, a left-hand fork of Fork Creek, a tributary to Coal River, in Boone County.
- Locust**; post village in Pocahontas County.
- Locust Knob**; summit in Clay County. Altitude, 1,500 feet.
- Locust Knob**; summit in Pocahontas County. Altitude, 4,392 feet.
- Locust Stump Knob**; summit in Braxton County. Altitude, 1,690 feet.
- Log**; run, a right-hand branch of Sinking Creek, a tributary to Little Kanawha River, in Gilmer County.
- Logan**; county, situated in the southwestern part of the State, on the Allegheny Plateau. It is here deeply dissected, the surface being an alternation of narrow, sharp ridges and deep, narrow valleys. It is drained by Tug Fork of Big Sandy and Guyandot rivers. Area, 494 square miles. Population, 6,955—white, 6,894; negro, 61; foreign born, 8. County seat, Logan. The mean magnetic declination in 1900 was 45'. The mean annual rainfall is 50 inches, and the mean annual temperature 50° to 55°.
- Logan**; county seat of Logan County on the Chesapeake and Ohio Railway.

- Logan**; fork, a small right-hand branch of Hopkins Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Logan**; run, a very small right-hand tributary to Valley River in Randolph County.
- Logansport**; village in Marion County.
- Lonecedar**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Lonetree**; post village in Tyler County. Altitude, 3,570 feet.
- Lone Tree**; summit of Rich Mountain in Randolph County. Altitude, 3,570 feet.
- Long**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Long**; branch, a left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Long**; branch, a small left-hand tributary to Middle Fork of Davis Creek, a branch of Kanawha River, in Kanawha County.
- Long**; branch, a small left-hand branch of Sandlick Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Long**; branch, an indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Long**; branch, a small right-hand tributary to Fifteen-mile Fork of Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Long**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Long**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Long**; branch, a small right-hand tributary to Big Clear Creek, a branch of Meadow River, in Greenbrier County.
- Long**; branch, a small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Long**; branch, a left-hand tributary of Guyandot River in Lincoln County.
- Long**; branch, a very small right-hand tributary to Mill Creek, a branch of Mud River, in Cabell County.
- Long**; fork, a left-hand branch of Laurel Patch Run in Braxton County.
- Long**; post village in Randolph County.
- Long**; run, a very small left-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Long**; run, a left-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Long**; run, a small left-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Webster County.
- Long**; run, a small left-hand tributary to Cheat River in Tucker and Preston counties.
- Long**; run, a small left-hand branch of Pritchett Creek in Marion County.
- Long**; run, a small right-hand tributary to Birch River in Braxton County.
- Long**; run, a left-hand branch of Berkeley Run in Taylor County.
- Long**; run, a very small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Longacre**; post village in Fayette County on the Ohio Central Lines.
- Long Bottom**; creek, a small left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Longdale**; post village in Mason County on the Baltimore and Ohio Railroad.
- Long Drain**; left-hand branch of Fish Creek in Wetzel County.
- Long Knob**; summit in Braxton County. Altitude, 1,510 feet.
- Long Lick**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Long Lick**; left-hand branch of Cedar Creek in Gilmer County.

- Long Pole**; creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Longreach**; post village in Tyler County on the Baltimore and Ohio Railroad.
- Long Ridge**; short range between North and South branches of the Potomac in Pendleton County.
- Longrun**; post village in Doddridge County on the Baltimore and Ohio Railroad.
- Long Run Hill**; summit in Randolph County.
- Longs**; run, a left-hand branch of Castleman Run in Ohio and Brooke counties.
- Long Shoal**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Long Shoal**; run, a small right-hand tributary to Little Kanawha River.
- Longs Ridge**; short spur between Turkey and Longs runs, small left-hand branches of Elk River, in Clay County.
- Lookout**; post village in Fayette County.
- Looneyville**; post village in Roane County.
- Loop**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Loop**; branch, a very small right-hand tributary to Tug River in McDowell County.
- Loop**; creek, a right-hand tributary to Kanawha River in Fayette County.
- Lorentz**; post village in Upshur County on the Baltimore and Ohio Railroad.
- Lorton Lick**; creek, a small right-hand tributary to Bluestone River in Mercer County.
- Lost**; branch, a very small right-hand tributary to Guyandot River in Mingo and Wyoming counties.
- Lost**; river, a head branch of Cacapon River, rising in Hardy County and flowing northeast into the Potomac.
- Lost**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Lost**; run, a right-hand branch of Fish Creek in Wetzel County.
- Lost**; run, a small right-hand branch of Laurel Creek, a tributary to Elk River, in Webster County.
- Lost City**; post village in Hardy County.
- Lostcreek**; post village in Harrison County on the Baltimore and Ohio Railroad. Altitude, 1,013 feet.
- Lost Flat**; broad summit in Greenbrier County.
- Lost River**; post village in Hardy County.
- Lot**; post village in Wetzel County.
- Lotta**; post village in Wirt County.
- Loudenville**; post village in Marshall County on the Baltimore and Ohio Railroad.
- Loudin**; post village in Randolph County.
- Louise**; post village in Pocahontas County.
- Lousecamp**; run, a small left-hand tributary to Cheat River in Tucker County.
- Louther**; post village in Jackson County.
- Loveberry**; run, a right-hand branch of Sand Fork in Lewis County.
- Loveridge**; post village in Greenbrier County.
- Lowdell**; post village in Wood County.
- Lowell**; branch, a very small right-hand branch of Indian Creek, a tributary to New River, in Monroe and Summers counties.
- Lowell**; post village in Summers County on the Chesapeake and Ohio Railway. Altitude, 1,512 feet.
- Lower**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Lower**; gap in Wyoming County.
- Lower**; mountain, a summit in Pocahontas County.

- Lower;** run, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.
- Lower;** run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Lower Big;** run, a right-hand branch of Leading Creek in Gilmer County.
- Lower Big;** run, a small right-hand tributary to Holly River in Webster County.
- Lower Birch;** run, a very small left-hand tributary to Elk River in Clay County.
- Lower Bull;** run, a right-hand tributary to Cedar Creek in Gilmer County.
- Lower Cove;** head waters of Lost River in Hardy County.
- Lower Frame;** run, a small left-hand tributary to Elk River in Clay County.
- Lower Gap;** branch, a small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Lower Hensley;** creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Low Gap;** branch, a small right-hand tributary to Little Marsh Fork, a branch of Coal River, in Raleigh County.
- Low Gap;** branch, a small right-hand tributary to Slab Fork, a branch of Guyandot River, in Raleigh County.
- Low Gap;** creek, a small left-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.
- Lower Level;** run, a left-hand branch of Cedar Creek in Gilmer County.
- Lower Lick;** small left-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Lower Pond Lick;** small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Lower Road;** branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Lower Rock Camp;** run, a small right-hand tributary to Elk River in Braxton County.
- Lower Shannon;** branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Lower Shant;** run, a small right-hand tributary to Back Fork of Elk River in Randolph County.
- Lower Shaver;** run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.
- Lower Sleith;** fork, a left-hand branch of Right Fork of Steer Creek in Braxton County.
- Lower Sturgeon;** branch, a small right-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Lower Threemile;** fork, a small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Lower Tony Camp;** run, a small right-hand tributary to Dry Fork of Cheat River in Randolph County.
- Lower Two;** run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Lower Two;** run, a small left-hand tributary to Cedar Creek in Gilmer County.
- Lowman;** post village in Wetzel County.
- Lowsville;** post village in Monongalia County.
- Lubeck;** post village in Wood County.
- Lucerne;** post village in Gilmer County.
- Lucile;** post village in Wirt County.
- Lukey;** fork, a small left-hand tributary to head of Mud River, a branch of Guyandot River, in Boone County.
- Lumberport;** post village in Harrison County on the Baltimore and Ohio Railroad.

- Lunice**; creek, a small left-hand tributary to South Branch of Potomac River in Grant County.
- Luray**; post village in Pendleton County.
- Lurd**; post village in Kanawha County.
- Luzon**; post village in Tyler County.
- Lydia**; post village in Clay County.
- Lykins**; creek, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Lynch**; post village in Harrison County on the Norfolk and Western Railway.
- Lynch**; run, a very small right-hand tributary to Little Kanawha River in Gilmer County.
- Lynn**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Lynncamp**; post village in Marshall County.
- Lynn Camp**; run, a small left-hand tributary to Little Kanawha River in Upshur County.
- Lynn Camp**; run, a left-hand branch of Fish Creek in Wetzel and Marshall counties.
- Lynn Camp**; run, a very small left-hand tributary to Gauley River in Webster County.
- Lynncamp**; run, a right-hand tributary of Left Fork of Steer Creek in Gilmer County.
- Lynn Knob**; summit in Randolph County.
- Lyon**; post village in Doddridge County.
- Lyons**; branch, a right-hand branch of Buch Fork of Twelvepole Creek in Wayne and Cabell counties.
- Lytton**; post village in Pleasants County on the Baltimore and Ohio Railroad.
- Mabie**; post village in Randolph County, on the Roaring Creek and Charleston Railroad.
- McAlpin**; village in Harrison County.
- McCauleys**; run, a left-hand branch of Oil Creek in Braxton County.
- McClains**; post village in Jackson County.
- McClung**; branch, a small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- McClungs**; post village in Greenbrier County.
- McClure**; branch, a small right-hand tributary to South Fork of Tug River in McDowell County.
- McComas**; branch, a very small left-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- McComas**; branch, a right-hand tributary of Mud River in Cabell County.
- McComas**; post village in Mercer County.
- McConkey**; village in Taylor County.
- McCowans**; mount, a spur of Shavers Mountain, between Shavers and Gladys forks of Cheat River.
- McCoy**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- McCue**; post village in Upshur County.
- McCurdy**; post village in Cabell County.
- McDonald**; fork, a small left-hand branch of Big Cub Creek, a tributary to Guyandot River, in Wyoming County.
- MacDonald**; station in Fayette County on the Chesapeake and Ohio Railway and on Dunloup Creek, a tributary to New River.
- McDonald Mill**; creek, a small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- McDowell**; branch, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.



- McDowell**; county, situated in the southern part of the State on the Allegheny Plateau. It is deeply dissected. The surface is drained in the main by Tug Fork of Big Sandy River.
- McDowell**; post village in McDowell County on the Norfolk and Western Railway.
- McElroy**; branch, a small left-hand tributary to Ohio River in Tyler County.
- McElroy**; creek, a small left-hand tributary to Ohio River in Doddridge County.
- MacFarlan**; post village in Ritchie County.
- McGee**; post village in Taylor County.
- McGraw**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- McGraws**; post village in Wyoming County. Altitude, 1,802 feet.
- McKee**; branch, a small right-hand tributary to Gauley River in Nicholas County.
- McKee**; mountain, a short ridge in Nicholas County. The highest peak reaches an altitude of 2,365 feet.
- McKendree**; station in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,411 feet.
- McKim**; creek, a small left-hand tributary to Ohio River in Pleasants County.
- McKim**; post village in Tyler County.
- Macksville**; post village in Pendleton County.
- McKinley**; post village in Wood County.
- McMechen**; town in Marshall County on the Baltimore and Ohio Railroad. Population, 1,465.
- McMellin**; post village in Monongalia County.
- McMillan**; creek, a small left-hand tributary to Big Laurel Creek, a branch of Cherry River, in Greenbrier County.
- McMillion**; creek, a left-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Mace Knob**; summit of Cheat Mountain in Pocahontas County.
- Madam**; creek, a small left-hand tributary to New River in Summers County.
- Madison**; county seat of Boone County.
- Madison**; creek, a left-hand branch of Guyandot River in Cabell County.
- Madison**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Wayne County.
- Madison**; run, a small right-hand tributary to Cheat River in Preston County.
- Magazine**; branch, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Maggie**; post village in Mason County on the Baltimore and Ohio Railroad.
- Magnolia**; post village in Morgan County on the Baltimore and Ohio Railroad.
- Mahan**; run, a left-hand branch of Buffalo Creek in Marion County.
- Mahogany**; run, a left-hand branch of Muach Run in Monongalia County.
- Mahone**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Mahone**; post village in Ritchie County.
- Mahoney**; creek, a left-hand branch of Mud River in Lincoln County.
- Maidsville**; post village in Monongalia County.
- Majorsville**; post village in Marshall County.
- Malden**; post village in Kanawha County on the Chesapeake and Ohio and the Ohio Central railroads. Altitude, 606 feet.
- Malta**; post village in Barbour County.
- Mammoth**; post village in Kanawha County on the Kellys Creek Railroad.
- Man**; creek, a small right-hand branch of Glade Creek, a tributary to New River, in Fayette County.
- Man**; post village in Logan County.
- Mandeville**; post village in Summers County.
- Manganese**; post village in Wood County.



**Manheim**; post village in Preston County.

**Manila**; post village in Boone County.

**Manning**; branch, a very small left-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.

**Manning**; branch, a very small right-hand tributary to Little Coal River in Boone County.

**Manning**; run, a small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.

**Manning Knob**; summit in Greenbrier County.

**Mannington**; town in Marion County on the Baltimore and Ohio Railroad. Altitude, 967 feet. Population, 1,681.

**Mann Knob**; summit in Wayne County. Altitude, 1,437 feet.

**Mann Knob**; summit in Greenbrier County.

**Manns**; creek, a small right-hand tributary to New River in Fayette County.

**Manown**; post village in Preston County.

**Maple**; fork, a small right-hand branch of Sand Fork of Paint Creek, a tributary to Kanawha River, in Raleigh County.

**Maple**; post village in Monongalia County.

**Maple**; run, a left-hand branch of Cheat River in Monongalia County.

**Mapledale**; post village in Greenbrier County.

**Maple Meadow**; creek, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.

**Maplewood**; post village in Fayette County.

**Marary**; branch, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.

**Marcus**; post village in Webster County.

**Margaret**; post village in Harrison County.

**Marie**; post village in Summers County.

**Marion**; county, situated in the northern part of the State, on the Allegheny Plateau. It is drained by tributaries to the Monongahela. Area, 357 squares miles. Population, 32,430—white, 31,942; negro, 482; foreign born, 1,769. County seat, Fairmont. The mean magnetic declination in 1900 was 3° 10'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.

**Marion**; post village in Wetzel County on the West Virginia Northern Railroad.

**Mark**; run, a right-hand tributary of Left Fork of Steer Creek in Gilmer County.

**Market**; post village in Doddridge County.

**Marlin**; mountain, a short ridge in Pocahontas County. The highest peak reaches an altitude of 3,198 feet.

**Marlin**; mountain, a short ridge between Thorny and Browns creeks in Pocahontas County.

**Marlin Lick**; small left-hand tributary to Greenbrier River in Pocahontas County.

**Marlinton**; county seat of Pocahontas County on the Chesapeake and Ohio Railway. Population, 171.

**Marlowe**; village in Berkeley County.

**Marmet**; post village in Kanawha County on the Chesapeake and Ohio Railway.

**Marpleton**; post village in Braxton County.

**Marquess**; post village in Preston County.

**Marrowbone**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Marrs**; branch, a very small left-hand tributary to New River in Fayette County.

**Marsh**; fork, a stream in Raleigh County, uniting with Clear Fork to form Coal River.

- Marsh**; fork, a small right-hand branch of Big Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Marsh**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Wyoming County.
- Marsh**; fork, an indirect left-hand tributary to Indian Creek, a branch of Guyandot River in Wyoming County.
- Marshall**; county, situated at the base of the Panhandle, bordering upon the Ohio River. Area, 311 square miles. Population, 26,444—white, 25,941; negro, 499; foreign born, 1,264. County seat, Moundsville. The mean magnetic declination in 1900 was  $1^{\circ} 50'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Ohio River and the Baltimore and Ohio railroads.
- Marshall**; post village in Jackson County.
- Marshes**; post village in Raleigh County.
- Marshville**; post village in Harrison County.
- Martha**; post village in Cabell County.
- Marthas Ridge**; short spur north of North Fork of Greenbrier River in Pocahontas County. Altitude, 3,500 to 4,000 feet.
- Martin**; branch, a left-hand tributary to Pocotaligo River, a branch of Kanawha River, in Kanawha County.
- Martin**; fork, a left-hand branch of Peachtree Creek, a tributary to Marsh Fork of Coal River, in Raleigh County.
- Martin**; post village in Grant County.
- Martinsburg**; county seat of Berkeley County on the Baltimore and Ohio and the Cumberland Valley railroads. Population, 7,564.
- Marytown**; post village in McDowell County.
- Mash**; branch, a small right-hand tributary to Dingus Run, a branch of Guyandot River, in Logan County.
- Mason**; county, situated in the western part of the State, bordering on Ohio River at the foot of the Allegheny Plateau. Area, 457 square miles. Population, 24,142—white, 23,604; negro, 537; foreign born, 317. County seat, Point Pleasant. The mean magnetic declination in 1900 was  $0^{\circ} 35'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Ohio Central Lines and the Ohio River Railroad.
- Mason**; village in Mason County. Population, 904.
- Masontown**; post village in Preston County on the Morgantown and Kingwood Railroad.
- Masonville**; post village in Grant County.
- Mast Knob**; summit in Randolph County.
- Matchless**; post village in Berkeley County.
- Mate**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Matewan**; post village in Mingo County on the Norfolk and Western Railway.
- Matewan**; station in Logan County on the Norfolk and Western Railway and on Tug Fork of Chattarawha River.
- Mathias**; post village in Hardy County.
- Mats**; creek, a small right-hand tributary to West Fork, a branch of Pond Fork of little Coal River, in Boone County.
- Mattie**; post village in Roane County.
- Matts**; creek, a very small left-hand tributary to Greenbrier River in Summers and Monroe counties.
- Matville**; post village in Raleigh County.
- Maud**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Maud**; run, a right-hand branch of North Fork of Fishing Creek in Wetzel County.

**Maxwell**; post village in Pleasants County.

**Maxwelton**; post village in Greenbrier County.

**May**; post village in Doddridge County.

**Maybeury**; post village in McDowell County on Norfolk and Western Railway and on South Fork of Elkhorn Creek. Altitude, 2,162 feet.

**Maynard**; branch, a very small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Mays**; gap in Little Mountain, caused by New Creek, in Grant County.

**Maysville**; post village in Grant County.

**Mayton**; post village in Webster County.

**Maywood**; post village in Fayette County.

**Meadland**; village in Taylor County.

**Meadow**; branch, a very small right-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.

**Meadow**; branch, a right-hand branch of Sleepy Creek in Berkeley and Morgan counties.

**Meadow**; creek, a right-hand branch of Anthony Creek, a tributary to Greenbrier River, in Greenbrier County.

**Meadow**; creek, a small right-hand tributary to New River in Summers and Fayette counties.

**Meadow**; creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Greenbrier County.

**Meadow**; creek, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.

**Meadow**; fork, a small left-hand branch of Devils Fork, a tributary to Guyandot River, in Raleigh County.

**Meadow**; fork, a small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.

**Meadow**; fork, a small right-hand branch of Cabin Creek, a tributary to Guyandot River, in Wyoming County.

**Meadow**; fork, a small right-hand branch of Brier Creek, a tributary to Coal River, in Kanawha County.

**Meadow**; river, a large left-hand branch of Gauley River, rising in Greenbrier County and flowing northwestward, forming the boundary between Fayette and Nicholas counties, until it enters the Gauley at Carnifax Ferry.

**Meadow**; run, a right-hand branch of Oil Creek in Braxton County.

**Meadow**; run, a right-hand branch of Middle Wheeling Creek in Ohio County.

**Meadowbluff**; post village in Greenbrier County.

**Meadowbrook**; post village in Harrison County on the Baltimore and Ohio Railroad.

**Meadow Creek**; mountain, a ridge in Greenbrier County lying nearly parallel to Allegheny Mountains. Altitude, 2,500 to 3,000 feet.

**Meadowcreek Station**; post village in Summers County on the Chesapeake and Ohio Railway.

**Meadowdale**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Meadowville**; post village in Barbour County.

**Meadville**; post village in Tyler County.

**Measle**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Wyoming County.

**Medina**; post village in Jackson County.

**Medley**; post village in Grant County.

**Meethouse**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Meethouse**; fork, a right-hand head fork of Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Meeting House;** branch, a very small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Meeting House;** run, a left-hand branch of Lost River in Taylor County.

**Meighen;** post village in Marshall County.

**Melissa;** post village in Cabell County.

**Mentor;** post village in Jackson County.

**Mercer;** county, situated in the southern part of the State bordering on Virginia.

It lies on the Allegheny Plateau or East River Mountains, which here form the escarpment which is the southern boundary of the county. Its elevation ranges from 2,000 to 4,000 feet. It is drained by tributaries to New River. Area, 437 square miles. Population, 23,023—white, 20,119; negro, 2,902; foreign born, 269. County seat, Princeton. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Norfolk and Western Railway.

**Mercer;** post village in Hancock County.

**Mercers Bottom;** post village in Mason County on the Baltimore and Ohio Railroad.

**Mercers Saltworks;** post village in Summers County.

**Meriden;** post village in Barbour County.

**Merrick;** branch, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Merrick;** creek, a very small left-hand tributary to Middle Fork of Mud River in Lincoln County.

**Merritt;** creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Messer;** creek, a very small right-hand branch of Marrowbone Creek, a tributary to Tug Fork of Big Sandy River, in Logan County.

**Messer;** run, a left-hand tributary of Pyles Fork of Buffalo Creek in Marion County.

**Metz;** post village in Marion County on the Baltimore and Ohio Railroad.

**Micajah Ridge;** mountains in Wyoming County.

**Michael;** mountain, a short ridge in Pocahontas County. Altitude, 3,000 to 3,500 feet.

**Middle;** branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Middle;** branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.

**Middle;** creek, a small left-hand tributary to Elk River in Clay County.

**Middle;** creek, a left-hand branch of Middle Fork of Mud River in Cabell County.

**Middle;** fork, a head fork of Back Fork of Elk River in Randolph County.

**Middle;** fork, a head fork of Cedar Creek in Braxton County.

**Middle;** fork, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Grant County.

**Middle;** fork, a left-hand tributary to Williams River in Webster and Pocahontas counties.

**Middle;** fork, a left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.

**Middle;** fork, a small left-hand tributary to Canoe Run in Lewis County.

**Middle;** fork, an indirect left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Middle;** fork, a small right-hand tributary to Right Fork of Buckhannon River in Randolph County.

**Middle;** fork, a small right-hand branch of Trace Fork of Guyandot River, a tributary to Ohio River, in Logan County.

**Middle;** fork, a right-hand branch of Island Creek, a tributary to Guyandot River, in Logan County.

- Middle**; mountain, a narrow ridge between Gap Mountain and Cove Mountain in Monroe County. Altitude, 2,500 to 3,000 feet.
- Middle**; mountain, a short ridge in the northern part of Pocahontas County. Altitude, 3,500 feet.
- Middle**; mountain, a narrow ridge in Pocahontas and Greenbrier counties.
- Middle**; mountain, a short ridge in Pendleton and Grant counties. Altitude, 2,000 feet.
- Middle**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Middle**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Middle**; run, a small left-hand tributary to Gauley River in Nicholas County.
- Middle**; run, a small right-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Middle**; run, a small right-hand tributary to Birch River in Braxton County.
- Middlebourne**; county seat of Tyler County. Population, 403.
- Middle Fork**; mountain, a ridge in Webster and Pocahontas counties, between Cranberry and Williams rivers. Altitude, 3,500 to 4,000 feet.
- Middlefork**; post village in Randolph County on the Baltimore and Ohio Railroad.
- Middle Island**; creek, a left-hand branch of Ohio River, rising in Tyler County.
- Middle Lick**; fork, a small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Middleton**; fork, a very small left-hand tributary to Bluestone River, in Mercer County.
- Middleway**; town in Jefferson County. Population, 466.
- Middle Wheeling**; creek, a left-hand branch of Little Wheeling Creek, in Ohio County.
- Midkiff**; post village in Lincoln County.
- Midway**; post village in Putnam County on the Ohio Central Lines.
- Mike**; run, a right-hand tributary of Ellis Creek in Gilmer County.
- Mike Knob**; summit of Yew Mountains in Greenbrier County. Altitude, 4,276 feet.
- Milam**; branch, a small right-hand tributary to South Fork of Tug River in McDowell County.
- Milam**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Milam**; post village in Hardy County.
- Milam Ridge**; mountains in Wyoming County.
- Milan**; fork, a left-hand branch of Barker Creek, a tributary to Guyandot River, in Wyoming County.
- Milan**; fork, a left-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Milburn**; branch, a small left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Milburn**; creek, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Mile**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Mile**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Mile**; branch, a small right-hand tributary to Whiteoak Creek, a branch of Coal River, in Boone County.
- Mile**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Mile**; branch, a very small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

- Mile;** creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Mile;** fork, a right-hand branch of Cooper Creek, a tributary to Elk River, in Kanawha County.
- Miles;** post village in Pendleton County.
- Miletus;** post village in Doddridge County.
- Mill;** branch, a very small left-hand tributary to Cherry River, a branch of Gauley River, in Nicholas County.
- Mill;** branch, a very small left-hand tributary to Fields Creek, a branch of Kanawha River, in Kanawha County.
- Mill;** branch, a small right-hand tributary to Williams River in Webster County.
- Mill;** branch, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Mill;** branch, a very small right-hand tributary to Tug River in McDowell County.
- Mill;** branch, a small right-hand tributary to Camp Creek, a branch of Bluestone River, in Mercer County.
- Mill;** branch, a small right-hand tributary to Barker Creek, a branch of Guyandot River, in Wyoming County.
- Mill;** branch, a very small right-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.
- Mill;** creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Mill;** creek, a left-hand tributary to South Branch of Potomac River in Hampshire County.
- Mill;** creek, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Mineral County.
- Mill;** creek, a very small left-hand branch of Island Creek, a tributary to Guyandot River, in Logan County.
- Mill;** creek, a small left-hand tributary to Bluestone River in Mercer County.
- Mill;** creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Mill;** creek, a very small left-hand tributary to New River in Raleigh County.
- Mill;** creek, a left-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Mill;** creek, a small left-hand branch of Ohio River in Jackson County.
- Mill;** creek, a left-hand tributary to Elk River in Kanawha County.
- Mill;** creek, a small left-hand tributary to Valley River in Randolph County.
- Mill;** creek, a small left-hand tributary to Elk River in Braxton County.
- Mill;** creek, a small left-hand tributary to Birch River, in Nicholas County.
- Mill;** creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Mill;** creek, a small right-hand tributary to Meadow River, a branch of Gauley River, in Greenbrier County.
- Mill;** creek, a small right-hand tributary to Tygarts Valley River in Barbour County.
- Mill;** creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Mill;** creek, a very small right-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Mill;** creek, a small right-hand tributary to Dunloup Creek, a branch of New River, in Raleigh County.
- Mill;** creek, a very small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Mill;** creek, a small right-hand branch of Hurricane Creek, a tributary to Kanawha River, in Putnam County.



**Mill**; creek, a right-hand tributary to New River in Fayette County.

**Mill**; creek, a right-hand branch of Valley River in Randolph County.

**Mill**; gap in a spur of the South Fork Mountains, caused by Brushy Run, in Pendleton County.

**Mill**; mountain, a short ridge on the boundary line between Hardy County, W. Va., and Shenandoah County, Va. Altitude; 3,000 feet.

**Mill**; run, a small left-hand tributary to Elk River in Webster County.

**Mill**; run, a small left-hand tributary to Gauley River in Webster County.

**Mill**; run, a small left-hand tributary to North Fork of Potomac River in Pendleton County.

**Mill**; run, a small, left-hand tributary to Elk River in Braxton County.

**Mill**; run, a small right-hand branch of Knapp Creek, a tributary of Greenbrier River, in Pocahontas County.

**Mill**; run, a small right-hand tributary to Back Fork of Elk River in Webster County.

**Mill**; run, a small right-hand tributary to Gauley River in Webster County.

**Mill**; run, a small right-hand tributary to Williams River in Webster County.

**Mill**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton County.

**Mill**; run, a small right-hand tributary to Dry Fork of Cheat River in Tucker County.

**Mill**; run, a small right-hand branch of Sugar Creek, a tributary to Back Fork of Elk River, in Webster and Randolph counties.

**Mill**; run, a small right-hand tributary to Elk River in Webster County.

**Mill**; run, head fork of Teter Creek, a branch of Tygarts Valley River, in Barbour County.

**Millard**; post village in Roane County.

**Millbrook**; post village in Hampshire County.

**Mill Creek**; mountain, a long, narrow ridge, lying parallel to the South Branch of the Potomac River, in Hardy and Hampshire counties. Altitude, 1,000 to 2,000 feet.

**Mill Creek**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.

**Miller**; creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Nicholas County.

**Miller**; run, a left-hand branch of Miller Fork of Rock Run in Wetzel County.

**Miller Knob**; summit in Webster County. Altitude, 2,742 feet.

**Miller Ridge**; short mountainous range in Webster County, south of the Gauley River.

**Millers**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Millers**; fork, a right-hand tributary to Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Millers Camp**; branch, a right-hand head fork of Marsh Fork of Coal River in Raleigh County.

**Millers Camp Branch**; post village in Raleigh County.

**Millers Ridge**; short spur in Greenbrier County. Altitude, 2,500 feet.

**Mill Fall**; run, a left-hand branch of West Fork River in Marion County.

**Millhill**; post village in Greenbrier County.

**Mill Hill**; summit in Greenbrier County.

**Mill Hollow**; small right-hand tributary to Kanawha River in Kanawha County.

**Milligan**; creek, a small right-hand tributary to Greenbrier River in Greenbrier County.

**Mill Knob**; summit in Nicholas County.

**Millpoint**; post village in Pocahontas County.



**Millsboro**; post village in Marshall County.

**Millsite**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Mill Site**; run, a small right-hand branch of Little Kanawha River in Gilmer County.

**Mill Site**; run, a small right-hand tributary to Right Fork of Buckhannon River in Upshur County.

**Millstone**; post village in Calhoun County.

**Millstone**; run, a right-hand branch of Little Kanawha River in Braxton County.

**Millville**; post village in Jefferson County on the Baltimore and Ohio Railroad.

**Millwood**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Milo**; post village in Calhoun County.

**Milroy**; post village in Braxton County.

**Milton**; town in Cabell County on the Chesapeake and Ohio Railway. Altitude, 586 feet. Population, 582.

**Mineral**; county, situated in the northeastern part of the State, limited on the west and north by Potomac River. Its surface is an alternation of ridges and valleys, ranging in elevation from 800 to over 3,000 feet. Area, 332 square miles. Population, 12,883—white, 12,218; negro, 665; foreign born, 451. County-seat, Keyser. The mean magnetic declination in 1900 was  $2^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $45^{\circ}$  to  $50^{\circ}$ . The county is traversed by the Baltimore and Ohio and the West Virginia Central and Pittsburg railroads.

**Mineral**; post village in Harrison County.

**Mineralwells**; post village in Wood County.

**Mingo**; county, situated in the southwestern part of the State, bordering on Big Sandy River, and lying on the Allegheny Plateau. It is here deeply dissected. Area, 424 square miles. Population, 11,359—white, 11,050; negro, 309; foreign born, 65. County seat, Williamson. The mean magnetic declination in 1900 was  $45'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Norfolk and Western Railway.

**Mingo**; post village in Randolph County.

**Mingo**; run, a small left-hand tributary to Valley River in Randolph County.

**Mingo**; run, a right-hand branch of Buffalo Creek in Brooke County.

**Mingo Knob**; summit in Randolph County.

**Mink**; post village in Kanawha County.

**Minkshoal**; branch, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.

**Minnie**; post village in Wetzel County.

**Minnora**; post village in Calhoun County.

**Minverton**; post village in Fayette County.

**Mipp**; post village in Wirt County.

**Miracle**; run, a right-hand branch of Dunkard Creek in Monongalia County.

**Miracle Run**; post village in Monongalia County.

**Missouri**; creek, a small left-hand tributary to Laurel Creek in Webster County.

**Missouri**; creek, a very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Missouri**; fork, a small left-hand branch of Hewett Creek, a tributary to Little Coal River, in Boone and Logan counties.

**Mitchell**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Mitchell**; post village in Pendleton County on the Ohio Central Lines.

**Mitchell**; run, a small right-hand tributary to Back Fork of Elk River in Randolph County.

- Mitchell Lick**; fork, a right-hand branch of Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Mitchell Ridge**; mountains in Raleigh County.
- Mitten Ridge**; short range of mountains in Webster County. Altitude, 3,000 feet.
- Mobley**; post village in Wetzel County.
- Moccasin**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Mod**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Mod**; run, a left-hand branch of Buffalo Creek in Marion County.
- Modoc**; post village in Greenbrier County.
- Moffett Knob**; summit in Pocahontas County. Altitude, 4,210 feet.
- Mohr**; post village in Wetzel County.
- Molehill**; post village in Ritchie County.
- Molers**; village in Jefferson County.
- Moll Kelly**; branch, a small left-hand tributary to Peachtree Creek, a branch of Marsh Fork of Coal River, in Raleigh County.
- Molly Kincaid**; branch, a very small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Mona**; post village in Monongalia County.
- Monarch**; post village in Kanawha County on the Ohio Central lines.
- Money**; run, a right-hand branch of Fishing Creek in Wetzel County.
- Monitor**; post village in Monroe County.
- Monongah**; town in Marion County on the Baltimore and Ohio Railroad. Population, 1,786.
- Monongahela**; river, the southernmost of the two main forks of Ohio River, the other being the Allegheny, which rises in southwestern New York. It heads in Lewis, Upshur, and Randolph counties in several large branches, West Fork, Tygart Valley, and Cheat rivers, while to the eastward heads the Youghiogheny, which flows into it near its mouth. It joins the Allegheny at Pittsburg, forming the Ohio. Length, about 190 miles; drainage area, 7,625 square miles; navigable to Morgantown.
- Monongalia**; county, situated in the Allegheny Plateau. It is drained by tributaries of the Monongahela. Area, 368 square miles. Population, 19,049—white, 18,747; negro, 299; foreign born, 301. County seat, Morgantown. The mean magnetic declination in 1900 was 3° 15'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Monroe**; county, situated in the southeastern part of the State. It is diversified by parallel ridges and valleys trending northeast and southwest. The western part is a plateau but little dissected and bearing numerous hills upon its surface. It is drained by tributaries of Greenbrier and New rivers. Area, 464 square miles. Population, 13,130—white, 12,300; negro, 830; foreign born, 32. County seat, Union. The mean magnetic declination in 1900 was 1° 55'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.
- Monroe**; post village in Randolph County.
- Monroe Draft**; small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.
- Montana Mines**; post village in Marion County.
- Montcalm**; post village in Mercer County.
- Monterville**; post village in Randolph County.
- Montgomery**; town in Fayette County on the Chesapeake and Ohio Railway and on Kanawha River. Altitude, 634 feet. Population, 1,594.

- Montrose**; post village in Randolph County on the West Virginia Central and Pittsburgh Railway.
- Moore**; fork, a very small left-hand branch of Elk Creek, a tributary to Guyandot River, in Logan County.
- Moore**; post village in Tucker County on the West Virginia Central and Pittsburgh Railway.
- Moore**; run, a left-hand branch of Indian Fork in Gilmer County.
- Moore**; run, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Moore Camp**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Moorefield**; county seat of Hardy County. Population, 460.
- Moorefield**; river, a right-hand head branch of South Branch of the Potomac in Hardy County.
- Moores**; run, a left-hand branch of Rocky Fork of Ellis Creek in Gilmer County.
- Mooresville**; post village in Monongalia County.
- Morford**; post village in Roane County.
- Morgan**; branch, a very small right-hand tributary to Drawdy Creek, a branch of Coal River, in Boone County.
- Morgan**; county, situated in the northeastern part of the State, limited on the north by Potomac River. The surface consists of broad valleys alternating with narrow ridges of no great height. Area, 235 square miles. Population, 7,294—white, 7,074; negro, 220; foreign born, 68. County seat, Berkeley Springs. The mean magnetic declination in 1900 was 4°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.
- Morgan**; run, a small left-hand tributary to Cheat River in Preston County.
- Morgan Ridge**; mountains in Mercer County.
- Morgans Glade**; post village in Preston County.
- Morgansville**; post village in Doddridge County on the Baltimore and Ohio Railroad.
- Morgantown**; county seat of Monongalia County on the Baltimore and Ohio and the Morgantown and Kingwood railroads. Population, 1,895. Altitude, 963 feet.
- Morley**; post village in Braxton County.
- Morocco**; post village in Clay County.
- Morris**; creek, a small left-hand tributary to Cranberry River, a branch of Gauley River, in Nicholas County.
- Morris**; creek, a very small left-hand tributary to Elk River in Kanawha County.
- Morris**; fork, a left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Morris**; post village in Wirt County.
- Morris**; run, a left-hand branch of Miller Fork of Rock Run in Wetzel County.
- Morrison**; fork, a very small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Morrison**; fork, a left-hand branch of Little Hurricane Creek, a tributary to Kanawha River, in Putnam County.
- Mosby**; branch, a very small right-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Moscow**; post village in Hancock County on the Pittsburgh, Cincinnati, Chicago and St. Louis Railroad.
- Moser Knob**; summit in Pendleton County.
- Moses**; creek, a very small left-hand branch of Right Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Moses**; run, a right-hand branch of Long Drain in Wetzel County.
- Mossy**; creek, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Mossy**; post village in Fayette County.

**Mound**; post village in Kanawha County.

**Moundsville**; county seat of Marshall County on the Baltimore and Ohio Railroad.

Population, 5,362. Altitude, 640 feet.

**Mountain**; creek, a small left-hand tributary to Bluestone River, a branch of New River, in Mercer County.

**Mountain**; fork, a small indirect right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Mountain**; run, a right-hand branch of Sleepy Creek in Morgan County.

**Mountain Cove**; post village in Fayette County.

**Mountain Lick**; small left-hand tributary to Williams River in Pocahontas County.

**Mount Carbon**; post village in Fayette County on Kanawha River and on the Chesapeake and Ohio and the Powellton and Pocahontas railways. Altitude, 639 feet.

**Mount Clare**; post village in Harrison County on the West Virginia Central and Pittsburg Railway. Altitude, 1,001 feet.

**Mount Desert**; summit in Kanawha County.

**Mount Harmony**; village in Marion County.

**Mount Hope**; town in Fayette County on Dunloup Creek, a tributary to New River. Population, 351.

**Mount Lookout**; post village in Nicholas County. Altitude, 2,017 feet.

**Mount Nebo**; post village in Nicholas County.

**Mount of Seneca**; post village in Pendleton County.

**Mount Olive**; post village in Mason County.

**Mount Storm**; post village in Grant County.

**Mount Tell**; post village in Jackson County.

**Mount Zion**; post village in Calhoun County.

**Mouse**; creek, a small left-hand branch of Hominy Creek, a tributary to Gauley River, in Nicholas County.

**Moyer**; gap between Sandy Ridge and Jack Mountains, caused by a small right-hand branch of South Branch of the Potomac, in Pendleton County.

**Moyer**; run, a small left-hand tributary to South Branch of the Potomac, in Pendleton County.

**Mozelle**; post village in Jackson County.

**Mud**; fork, a small left-hand tributary to Turtle Creek, a branch of Little Coal River, in Boone County.

**Mud**; fork, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Mud**; post village in Lincoln County.

**Muddlety**; creek, a right-hand branch of Gauley River, in Nicholas County.

**Muddlety**; post village in Nicholas County.

**Muddy**; creek, a right-hand tributary to Greenbrier River, in Greenbrier County.

**Muddy**; run, a small left-hand tributary to Cheat River, in Preston County.

**Muddy Cove**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.

**Muddy Creek**; mountain, a ridge in Greenbrier County. Altitude, 2,000 to 2,500 feet.

**Mud Hole**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Mud Lick**; a small left-hand branch of Morris Fork of Blue Creek, a tributary to Elk River, in Kanawha County.

**Mud Lick**; a small right-hand tributary to Little Kanawha River, in Gilmer County.

**Mudlick**; branch, a small right-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.

**Mudlick**; branch, a very small right-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.

- Mud Lick**; fork, a small left-hand branch of Leatherwood Creek, a tributary to Elk River, in Kanawha County.
- Mudlick**; fork, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Mud Lick**; fork, a small right-hand tributary to Blake Branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Mudlick**; run, a left-hand branch of Carney Fork of Rock Run, in Wetzel County.
- Mudlick**; run, a left-hand branch of Pritchett Creek, in Marion County.
- Mud Lick**; run, a small left-hand tributary to South Branch of the Potomac, in Hardy County.
- Mulberry**; fork, a left-hand branch of Jenkins Fork of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Mulberry**; fork, a small right-hand tributary to Left Fork of Middle Fork of Tygart Valley River, in Randolph County.
- Mullin**; branch, a very small left-hand tributary to Winding Gap, a branch of Guyandot River, in Raleigh County.
- Mulvane**; post village in Fayette County.
- Munday**; post village in Wirt County.
- Mundy Lick**; small left-hand tributary to Greenbrier River, in Pocahontas County.
- Mundy Lick Ridge**; short mountainous range between Greenbrier River and Buckley Mountain, in Pocahontas County.
- Munson**; post village in Morgan County.
- Murphytown**; post village in Wood County.
- Murraysville**; post village in Jackson County, on the Baltimore and Ohio Railroad.
- Muses Bottom**; post village in Jackson County.
- Musick**; post village in Mingo County.
- Mutton Run**; post village in Hampshire County.
- Muzzle**; fork, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Myerstown**; village in Jefferson County.
- Myra**; post village in Lincoln County.
- Myrtle**; post village in Mingo County.
- Nancy**; fork, a small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Napier**; post village in Braxton County.
- Napier Ridge**; range of hills in Wayne County. Altitude, about 1,200 feet.
- Narrow**; branch, a very small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.
- Nat**; post village in Mason County.
- Naul**; creek, a right-hand branch of Little Kanawha River, in Braxton County.
- Neal**; branch, a small right-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Nease**; post village in Mason County.
- Ned**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Needmore**; post village in Hardy County.
- Neel**; village in Marion County.
- Nelson**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Neponset**; post village in Summers County.
- Neptune**; post village in Jackson County.
- Nesselroad**; post village in Jackson County.

**Nestlow**; post village in Wayne County.

**Nestorville**; post village in Barbour County.

**Nettly**; mountain, a short ridge west of Valley River, in Randolph County.

**New**; creek, a left-hand tributary to North Fork of Potomac River, in Grant County.

**New**; creek, a right-hand tributary to North Branch of Potomac River, in Grant and Mineral counties.

**New**; post village in Raleigh County.

**New**; river, a large branch of the Kanawha River, rising in Watauga County, N. C., and flowing in a peculiar course first north and thence westward to its junction with the Gauley River, where they form the Kanawha, in Fayette County, W. Va.

**Newark**; post village in Wirt County on the Little Kanawha Railroad.

**Newberne**; post village in Gilmer County.

**Newburg**; town in Preston County on the Baltimore and Ohio Railroad. Population, 751. Altitude, 755 feet.

**Newcomb**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Newcomb**; creek, a small right-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**New Creek**; mountain, a broken, mountainous country in Grant and Mineral counties. Altitude, 2,000 to 2,500 feet.

**Newcreek**; post village in Mineral County.

**New Cumberland**; county seat of Hancock County on the Pittsburg, Cincinnati, Chicago and St. Louis Railroad. Population, 2,198.

**Newdale**; post village in Wetzel County.

**New England**; post village in Wood County.

**Newfound**; post village in Wyoming County.

**Newhaven**; post village in Mason County, on the Baltimore and Ohio Railroad.

**New Hope**; post village in Mercer County.

**Newhouse**; branch, a small right-hand tributary to Elk River, a branch of Kanawha River, in Kanawha County.

**Newlands**; run, a right-hand tributary of Short Creek, in Brooke County.

**Newlandsville**; post village in Pleasants County.

**Newlonton**; post village in Upshur County.

**New Martinsville**; county seat of Wetzel County. Population, 1,089.

**New Milton**; post village in Doddridge County.

**Newport**; post village in Wood County.

**New Richmond**; post village in Summers County, on the Chesapeake and Ohio Railway. Altitude, 1,289 feet.

**Newson**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Newton**; post village in Roane County, on the West Virginia Central and Pittsburg Railway. Altitude, 1,917 feet.

**Newville**; post village in Braxton County.

**Next**; post village in Tyler County.

**Nicholas**; county, situated in the central part of the State, on the Allegheny Plateau. It is drained by Gauley River and its tributaries. Area, 691 square miles. Population, 11,403—white, 11,384; negro, 19; foreign born, 245. County seat, Summersville. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.

**Nickells Knob**; summit in Greenbrier County. Altitude, 2,725 feet.

**Nickells Mills**; post village in Monroe County.

**Nicklow**; post village in Barbour County.

**Nicolette**; post village in Wood County on the Baltimore and Ohio Railroad.



- Nigger**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Nigger Camp**; run, a small right-hand branch of Old Lick Creek, a tributary to Holly River, in Webster County.
- Nina**; post village in Doddridge County.
- Ninemile**; creek, a small left-hand tributary to Ohio River in Cabell County.
- Ninemile**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Ninemile**; fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Nixon**; post village in Upshur County.
- Nobe**; post village in Calhoun County.
- Nolan**; post village in Mingo County.
- Norman**; run, a small left-hand tributary to Holly River in Webster County.
- Normantown**; post village in Gilmer County.
- North**; branch, a small right-hand tributary to Big Creek, a branch of Guyandot River, in Logan County.
- North**; river, a large left-hand branch of Great Cacapon River, rising in South Branch Mountain, in Hardy County.
- North Fork**; mountains in the eastern part of the State, lying between North and South forks of the Potomac, in Pendleton and Grant counties. Altitude, 2,000 to 4,000 feet.
- North Fork**; post village in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek.
- North Mill**; creek, a right-hand tributary to South Branch of the Potomac, in Grant and Pendleton counties, known in its upper course as Brushy Run.
- North Mountain**; post village in Berkeley County on the Baltimore and Ohio Railroad. Altitude, 547 feet.
- Northriver Mills**; post village in Hampshire County.
- Northspring**; post village in Wyoming County.
- Norwood**; post village in McDowell County on Elkhorn Creek and on the Norfolk and Western Railway.
- Noseman**; branch, a very small right-hand tributary to Cooney Otter Creek, an indirect left-hand tributary to Guyandot River, in Wyoming County.
- Notchlog**; fork, a small left-hand tributary to Dry Branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Numan**; post village in Doddridge County.
- Nunly**; mountain, a short ridge in Greenbrier County.
- Nuttallburg**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 944 feet.
- Nutter**; run, a small left-hand tributary to Little Kanawha River in Gilmer County.
- Nutterfarm**; post village in Ritchie County.
- Nuttsville**; post village in Greenbrier County.
- Nye**; post village in Putnam County.
- Oak**; branch, a very small left-hand tributary to Long Pole Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Oak**; post village in Wood County.
- Oakflat**; post village in Pendleton County.
- Oakgrove**; post village in Mercer County.
- Oakland**; post village in Morgan County.
- Oakvale**; post village in Mercer County on the Norfolk and Western Railway. Altitude, 1,705 feet.
- Oakville**; post village in Roane County on the Norfolk and Western Railway.
- O'Brien**; creek, a small right-hand tributary to Elk River in Clay County.



- O'Brien**; fork, a left-hand branch of Salt Lick Fork of Little Kanawha River in Braxton County.
- O'Brien**; fork, a right-hand branch of Right Fork of Steer Creek in Gilmer and Braxton counties.
- Oceana**; county seat of Wyoming County. Population, 187.
- Odaville**; post village in Jackson County.
- Odd**; post village in Raleigh County.
- Odell**; post village in Kanawha County on the Clendennin and Spencer Railway.
- Odessa**; post village in Clay County on Porters Creek and Gauley Railway.
- Ogdin**; post village in Wood County.
- Ohio**; county, situated in the Panhandle, bordering on Ohio River. Area, 111 square miles. Population, 48,024—white, 46,765; negro, 1,251; foreign born, 6,140. County seat, Wheeling. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Wheeling and Lake Erie, the Wheeling Terminal, the Baltimore and Ohio, the Cleveland, Lorain and Wheeling, the Ohio River, the Pittsburg, Cincinnati, Charleston and St. Louis, and the Wheeling and Elm Grove railroads.
- Ohio**; river, formed by the Allegheny and Monongahela rivers, which unite at Pittsburg, in Pennsylvania, where it is a navigable stream about 600 yards wide. It runs first northwestward to Beaver, and, after it has crossed the western boundary of Pennsylvania, flows southward to Wheeling. Below this point it forms the boundary between Ohio and West Virginia, and runs southwestward to the mouth of the Sandy River. It next forms the boundary between Kentucky and Ohio, and pursues a west-northwestward course to Cincinnati. After it strikes the eastern border of Indiana, it runs nearly southwestward with a very sinuous course and forms the boundary between Indiana and Illinois on the right and Kentucky on the left, until it enters the Mississippi at Cairo, in latitude 37° N., and about 1,200 miles from the mouth of the Great River. Drainage area, 201,720 square miles. Length, 963 miles. It is navigable throughout.
- Oil**; creek, a right-hand branch of Little Kanawha River in Braxton and Lewis counties.
- Oilville**; post village in Logan County.
- Oka**; post village in Calhoun County.
- Okeeffe**; post village in Mingo County.
- Okonoko**; post village in Hampshire County on the Baltimore and Ohio Railroad.
- Old Camp**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Old Field**; fork, a left-hand head fork of Elk River in Pocahontas County.
- Old Field**; fork, a right-hand branch of Sand Fork in Lewis County.
- Old Field**; mountain, a short ridge in Greenbrier County. One of the peaks has an altitude of 4,244 feet.
- Old Field Ridge**; short spur between Black Run of North Fork of Greenbrier and North Fork of Pocahontas County.
- Oldfields**; post village in Hardy County. Altitude, 800 feet.
- Old House**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Old House**; branch, a very small right-hand tributary to Spruce Fork of Little Coal River, in Logan County.
- Old Lick**; creek, a head fork of Left Fork of Holly River in Webster County.
- Old Man**; run, a small right-hand tributary to Cacapon River in Hampshire County.
- Old Perryville**; village, in McDowell County, located on Dry Fork, a tributary to Tug Fork of Big Sandy River.

- Old Shop**; branch, a very small right-hand tributary to Winding Gap, a branch of Guyandot River, in Raleigh County.
- Old Slab**; fork, a small right-hand branch of Slab Fork, a tributary to Guyandot River, in Wyoming County.
- Oldtown**; village in Mason County.
- Old Woman**; run, a very small right-hand tributary to Elk River in Braxton County.
- Oley**; post village in Raleigh County.
- Olive**; post village in Harrison County.
- Olympia**; post village in Wirt County.
- Omps**; post village in Morgan County.
- Ona**; post village in Cabell County on the Chesapeake and Ohio Railway. Altitude, 623 feet.
- One**; fork, a small indirect tributary to Buffalo Creek, a branch of Elk River, in Clay County.
- Onego**; post village in Pendleton County.
- O'Neills Knob**; summit in Greenbrier County.
- Onemile**; creek, a very small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Onemile**; creek, a very small right-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Onemile**; fork, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Onoto**; post village in Pocahontas County.
- Oors**; run, a right-hand tributary of Middle Wheeling Creek in Ohio County.
- Oozley**; branch, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Opekiska**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Open**; fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Open**; fork, a small right-hand tributary to Loop Creek, a branch of Kanawha River, in Fayette County.
- Openmouth**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Ophelia**; post village in Nicholas County.
- Opossum**; creek, a right-hand branch of Mill Creek, a tributary to New River, in Fayette County.
- Oral**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Orange**; post village in Boone County.
- Orchard**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Orchard**; branch, a very small left-hand branch of Laurel Creek, a tributary to New River, in Fayette County.
- Orchard**; branch, a small left-hand branch of Sandlick Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Orchard**; post village in Monroe County.
- Orem**; post village in Wood County.
- Organcave**; post village in Greenbrier County.
- Orient**; post village in Calhoun County.
- Orleans Crossroads**; post village in Morgan County on the Baltimore and Ohio Railroad.
- Orlena**; post village in Randolph County.
- Orpha**; post village in Barbour County.
- Orr**; post village in Preston County.

- Osborne**; creek, a right-hand branch of Mill Creek, a tributary to New River, in Fayette County.
- Osbornes Mills**; post village in Roane County.
- Osceola**; post village in Randolph County.
- Osgood**; post village in Monongalia County.
- Otia**; post village in Mason County.
- Otter**; branch, a very small left-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Otter**; creek, a small right-hand tributary to Meadow River, in Greenbrier County.
- Otter**; creek, a small right-hand branch of Peters Creek, a tributary to Gauley River, in Nicholas County.
- Otter**; creek, a left-hand branch of Tygart Valley River in Taylor County.
- Otter**; fork, one of the head forks of Left Fork of Steer Creek in Braxton County.
- Otter**; fork, a left-hand tributary to Dry Fork of Cheat River in Tucker and Randolph counties.
- Otter**; fork, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Otter**; run, a right-hand branch of Pritchett Creek in Marion County.
- Otto**; post village in Roane County.
- Overfield**; post village in Barbour County.
- Overhill**; post village in Upshur County.
- Owen**; run, a small right-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Oxbow**; post village in Ritchie County.
- Oxford**; post village in Doddridge County.
- Pack**; branch, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.
- Pack**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Pack**; fork, a small left-hand branch of Rockhouse Fork of Dingus Run, a tributary to Guyandot River, in Logan County.
- Packs Ferry**; post village in Summers County.
- Pad**; fork, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Pad**; post village in Roane County.
- Padds**; run, a left-hand branch of Lost Run in Taylor County.
- Paddy**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Paddy**; branch, a right-hand branch of Trace Fork in Cabell County.
- Paddy**; mountain, a short ridge in Frederick and Shenandoah counties. Altitude, 2,500 to 3,000 feet.
- Paddy**; run, a small left-hand branch of Cedar Creek in Gilmer County.
- Paddys**; run, a right-hand branch of Saltlick Creek in Braxton County.
- Paddy Knob**; summit in Braxton County.
- Padenvalley**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Page**; post village in Putnam County.
- Paint**; branch, a right-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Paint**; creek, a left-hand branch of Kanawha River in Kanawha, Fayette, and Raleigh counties.
- Paint**; creek, a large right-hand tributary to Kanawha River in Kanawha, Fayette, and Raleigh counties.
- Paint**; mountain on boundary line between Fayette and Raleigh counties.

**Paintcreek**; post village in Kanawha County on the Chesapeake and Ohio Railway.

Altitude, 622 feet.

**Palace Ridge**; summit in the northern part of Randolph County.

**Palace Valley**; post village in Upshur County.

**Palmer**; post village in Braxton County on the Holly River and Addison Railway.

**Palser**; run, a small right-hand branch of Steer Run in Gilmer County.

**Pansy**; post village in Grant County.

**Panther**; branch, a very small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Panther**; branch, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Panther**; creek, a small left-hand tributary to Gauley River in Nicholas County.

**Panther**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Panther**; creek, a left-hand branch of Tug Fork of Big Sandy River in McDowell County.

**Panther**; creek, a small right-hand tributary to Buckhannon River in Upshur County.

**Panther**; post village in McDowell County on the Norfolk and Western Railway.

**Panther**; run, a small right-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Panther**; run, a small right-hand tributary to Little Kanawha River in Upshur County.

**Panther Camp**; fork, a small left-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.

**Panther Knob**; summit in Summers County.

**Panther Knob**; summit in Wyoming County.

**Panther Knob**; summit in Pendleton County.

**Panther Lick**; run, a small left-hand tributary to Elk River in Webster County.

**Panther Lick**; very small right-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.

**Paola**; post village in Doddridge County.

**Paradise**; post village in Putnam County.

**Parchment Valley**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Park**; gap in Fork Mountains caused by Beach Lick Run, a short branch of South Fork of Cherry River, in Greenbrier County.

**Parker**; creek, a small left-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.

**Parkers**; post village in Doddridge County.

**Parkersburg**; county seat of Wood County on the Baltimore and Ohio, the Baltimore and Ohio Southwestern, and the Little Kanawha railroads. Altitude, 616 feet. Population, 11,703.

**Parrish**; post village in Pleasants County.

**Parsner**; creek, a small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.

**Parsons**; county seat of Tucker County on the West Virginia Central and Pittsburg Railway.

**Pasco**; post village in Roane County.

**Pasture**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Patrick**; creek, a small left-hand branch of West Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Patrick**; peak, a knob of Wolf Creek Mountain in Monroe County.

- Patrick**; post village in Kanawha County.
- Patsey**; post village in Roane County.
- Patters**; run, a left-hand branch of Big Creek in Lincoln County.
- Patterson**; creek, right-hand branch of North Branch of Potomac River in Grant and Mineral counties.
- Patterson Creek**; mountain, a narrow ridge along the boundary line of Grant and Hardy counties. Altitude, 2,000 to 2,500 feet.
- Pattersons Depot**; post village in Mineral County.
- Patton**; knob in Taylor County.
- Patton**; post village in Monroe County.
- Paw Paw**; creek, a small left-hand branch of Monongahela River in Monongalia County.
- Pawpaw**; town in Morgan County on the Baltimore and Ohio Railroad. Population, 693.
- Payne Knob**; summit in Fayette County. Altitude, 2,804 feet.
- Payne Knob**, summit in Webster County. Altitude, 3,126 feet.
- Paynes**; branch, a small left-hand tributary to Five Mile Creek, a branch of East River, in Mercer County.
- Peabody**; post village in Wetzel County.
- Peach**; creek, a small right-hand branch of Guyandot River, a tributary to Ohio River, in Logan County.
- Peachtree**; branch, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Peachtree**; creek, a left-hand branch of Marsh Fork of Coal River in Raleigh County.
- Peachtree**; post village in Raleigh County.
- Peach Tree**; run, a right-hand tributary to Steer Run in Gilmer County.
- Peak Ridge**; mountains in Wyoming County.
- Pear**; post village in Raleigh County.
- Pearl**; mountain ridge in bend of Tilhance Creek in Berkeley County.
- Pearl**; post village in Nicholas County.
- Pearson**; branch, a small right-hand branch of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Peck**; post village in Logan County. Altitude, 653 feet.
- Pecksrn**; post village in Upshur County.
- Peddler**; run, a right-hand branch of Simpson Run in Taylor County.
- Pedee**; fork, a small left-hand tributary to Rock Creek, a branch of Little Coal River, in Boone County.
- Pedlar**; post village in Monongalia County.
- Peeled Chestnut**; gap in Big Stone Ridge on boundary between McDowell and Mercer counties.
- Peel Tree**; post village in Barbour County.
- Peery Camp**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Peeryville**; post village in McDowell County located on Dry Fork, a large left-hand tributary to Tug Fork of Big Sandy River.
- Peet**; post village in Randolph County.
- Peewee**; post village in Wirt County.
- Pemberton**; post village in Raleigh County.
- Penbro**; post village in Webster County.
- Pence Springs**; post village in Summers County on the Chesapeake and Ohio Railway.
- Pendleton**; county, situated in the eastern part of the State, against the boundary of Virginia. Its surface is mountainous, consisting of alternations of valleys and

ridges. It is drained northward by tributaries to the Potomac River. Area, 707 square miles. Population, 9,167—white, 9,044; negro, 123; foreign born, 6. County seat, Franklin. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Ohio River Railroad.

**Penfield**; branch, a very small left-hand tributary to New River in Fayette County.

**Peniel**; post village in Roane County.

**Pennsboro**; town in Ritchie County on the Baltimore and Ohio Railroad. Population, 738.

**Penrith**; village in Hancock County.

**Pentress**; post village in Monongalia County.

**Peora**; village in Harrison County.

**Pepper**; post village in Barbour County.

**Perkins**; fork, a head fork of Cedar Creek in Braxton County.

**Perry**; branch, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay and Nicholas counties.

**Perry**; post village in Hardy County.

**Perry Ridge**; short spur north of Cranberry River in Nicholas County.

**Persinger**; post village in Nicholas County.

**Persinger**; run, a small right-hand tributary to Gauley River in Nicholas County.

**Peru**; post village in Hardy County.

**Peter**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.

**Peter Cove**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Peter Johnson**; run, a right-hand branch of Pritchett Creek in Marion County.

**Peters**; creek, a right-hand branch of Gauley River in Nicholas County.

**Peters**; creek, a right-hand branch of Little Wheeling Creek in Ohio County.

**Peters**; gap in Great Flat Top Mountain in Mercer County.

**Peters**; mountain, a long, narrow ridge in Monroe County, W. Va., and Alleghany County, Va.

**Peters**; mountain, a ridge in Monroe County.

**Peters**; mountain, a short ridge between North Fork and Moore Run, branches of Greenbrier River, in Pocahontas County.

**Petersburg**; post village and county seat of Grant County on South Branch of Potomac River.

**Peters Cave**; fork, a left-hand branch of Horse Creek, a tributary to Little Coal River, in Lincoln County.

**Peters Creek**; fork, a small left-hand branch of Hardway Branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.

**Peterstown**; town in Monroe County, situated on Rich Creek. Altitude, 1,745 feet. Population, 167.

**Petes**; fork, a very small right-hand branch of Falling Rock Creek, a tributary to Elk River, in Kanawha and Clay counties.

**Petroleum**; post village in Ritchie County on the Baltimore and Ohio Railroad. Altitude, 697 feet.

**Pettit**; post village in Randolph County.

**Pewee**; knob in Taylor County.

**Peytona**; post village in Boone County.

**Pharoah**; post village in Wayne County.

**Phillip Camp**; fork, a small tributary to Left Fork of Buckhannon River in Randolph County.

**Philippi**; county seat of Barbour County on the Baltimore and Ohio Railroad. Altitude, 1,192 feet. Population, 665.

- Phillips**; branch, a very small right-hand branch of Tug Fork of Chattoah River, a tributary to Ohio River, in Logan County.
- Phillips**; run, a small left-hand tributary to Muddlety Creek, a branch of Gauley River, in Nicholas County.
- Philoah**; post village in Putnam County.
- Pickaway**; post village in Monroe County.
- Pickens**; post village in Randolph County on the Baltimore and Ohio Railroad.
- Pickle**; mountain, a short ridge west of the South Branch of the Potomac in Pendleton County. Altitude, 2,500 to 3,000 feet.
- Pickles**; fork, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Piedmont**; town in Mineral County on the Baltimore and Ohio and on the Cumberland and Pennsylvania railroads. Altitude, 933 feet. Population, 2,115.
- Piercy**; post village in Jackson County.
- Pigeon**; creek, a right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Pigeon**; creek, a very small right-hand tributary to Guyandot River in Wyoming County.
- Pigeon**; fork, a left-hand branch of Naul Creek in Braxton County.
- Pigeon**; post village in Roane County.
- Pigeon**; run, a right-hand branch of left fork of Steer Creek in Gilmer County.
- Pigeon**; run, a right-hand branch of Stony Creek, tributary to Greenbrier River, in Pocahontas County.
- Pigeon**; station in Logan County on the Norfolk and Western Railway and at junction of Pigeon Creek with Tug Fork of Big Sandy River. Altitude, 1,299 feet.
- Pigeon Knob**; summit in Lincoln County. Altitude, 1,354 feet.
- Pigeon Roost**; a summit in Wayne County. Altitude, 1,105 feet.
- Pigeon Roost**; branch, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Pigeon Roost**; creek, a left-hand branch of Big Ugly Creek, a tributary to Guyandot River in Lincoln County.
- Pigeon Roost**; fork, a small left-hand branch of Lower Sleith Fork in Braxton County.
- Pigeon Roost**; fork, a small left-hand branch of Right Fork of Stone Coal Creek in Upshur County.
- Pigeon Roost**; fork, a small, indirect left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Pigeon Roost**; fork, a right-hand branch of Lick Creek, a tributary to Little Coal River, in Boone County.
- Pike**; post village in Ritchie County.
- Pilot**; triangulation station on Great Flat Top Mountain on boundary line between Wyoming and Mercer counties.
- Pinch**; creek, a small left-hand tributary to Elk River in Kanawha County.
- Pinch Gut**; creek, a small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Pine**; creek, a left-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.
- Pine**; run, a right-hand branch of Indian Fork in Gilmer County.
- Pine**; run, a small right-hand tributary to Peter Creek, a branch of Gauley River, in Nicholas County.
- Pinebluff**; village in Harrison County.
- Pine Glade**; run, a small right-hand tributary to Gauley River in Webster County.
- Pinegrove**; post village in Wetzel County on the Baltimore and Ohio Railroad.



- Pine Grove**; run, a small right-hand tributary to Williams River in Webster County.
- Pineville**; post village in Wyoming County.
- Piney**; creek, a left-hand branch of New River in Raleigh County.
- Piney**; creek, a small right-hand branch of Meadow River, a tributary to Gauley River, in Greenbrier and Nicholas counties.
- Piney**; fork, a left-hand branch of Fishing Creek in Wetzel County.
- Piney**; post village in Wetzel County on the Ohio Central Lines. Altitude, 1,120 feet.
- Piney**; run, a right-hand branch of Pritchett Creek in Marion County.
- Piney Mount**; triangulation station in Cabell County. Altitude, 1,115 feet.
- Piney Swamp**; run, a small right-hand tributary to North Branch of Potomac River in Mineral County.
- Pink**; post village in Calhoun County.
- Pinkerton**; knob in Third Hill Mountain in Berkeley County. Elevation, 1,700 feet.
- Pinnacle**; creek, a left-hand branch of Guyandot River in Wyoming County.
- Pinnacle**; hill in Mercer County.
- Pinnacle**; triangulation station in Allegheny Front in Mineral County. Altitude, 3,827 feet.
- Pinoak**; post village in Mercer County.
- Pioneer**; post village in Marshall County.
- Pious**; mountain ridge in Morgan County. Elevation, 800 feet.
- Piper**; fork, a small right-hand tributary to Crooked Fork in Braxton County.
- Pipestem**; creek, a small left-hand tributary to New River in Summers County.
- Pipestem**; post village in Summers County.
- Pipestem Knob**; summit in Mercer County.
- Pisgah**; mount, a summit in Clay County. Altitude, 1,683 feet.
- Pisgah**; post village in Preston County.
- Pisgah**; run, a very small left-hand tributary to Elk River, a branch of Kanawha River, in Clay County.
- Pittman**; post village in Fayette County.
- Plankcabin**; creek, a small left-hand branch of Second Creek, a tributary to Greenbrier River, in Monroe County.
- Plant**; post village in Lewis County.
- Plantation**; fork, a left-hand tributary to O'Brien Fork in Braxton County.
- Plantation**; fork, a head fork of Right Fork of Steer Creek in Braxton County.
- Pleasant**; creek, a left-hand branch of Tygart Valley River in Taylor County.
- Pleasant**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygart Valley River in Randolph County.
- Pleasant**; run, a small left-hand tributary to Shavers Fork of Cheat River in Randolph County.
- Pleasantdale**; post village in Hampshire County.
- Pleasanthill**; post village in Preston County.
- Pleasant Retreat**; post village in Clay County.
- Pleasantrun**; post village in Tucker County.
- Pleasants**; county, situated in the northwestern part of the State, bordering on the Ohio River. Area, 142 square miles. Population, 9,341—white, 9,335; negro, 6; foreign born, 83. County seat, Saint Marys. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River Railroad.
- Pleasants**; post village in Pleasants County.
- Pleasant Valley**; town and post village in Marshall County. Population, 180.
- Pleasantview**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Pliny**; post village in Putnam County.

**Plum**; fork, a right-hand branch of Grove Creek in Clay County.

**Plum**; post village in Tyler County.

**Plum**; run, a left-hand branch of Buffalo Creek in Marion County.

**Plum**; run, a right-hand branch of Tygart Valley River in Taylor County.

**Plum Orchard**; creek, a small right-hand branch of Paint Creek, a tributary to Kanawha River, in Fayette County.

**Plummer**; knob in Taylor County. Elevation, 1,500 feet.

**Plummer**; run, a right-hand branch of Booths Creek in Taylor County.

**Pluto**; post village in Raleigh County.

**Plymah**; branch, a right-hand branch of Twelvepole Creek in Wayne County.

**Plymouth**; post village in Putnam County on the Ohio Central Lines.

**Poca**; post village in Putnam County on the Ohio Central Lines. Altitude, 573 feet.

**Poca**; river, a small left-hand tributary to Ohio River rising in Roane County.

**Pocahontas**; county, situated in the eastern part of the State. Its surface is mountainous, consisting of a broken plateau, deeply dissected. It is drained by Greenbrier River. Area, 858 square miles. Population, 8,572—white, 7,947; negro, 625; foreign born, 345. County seat, Marlinton. The mean magnetic declination in 1900 was 2° 5'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°.

**Pocotaligo**; post village in Kanawha County.

**Pocotaligo**; river, a right-hand branch of Kanawha River in Putnam, Kanawha, and Roane counties.

**Pocosin**; fork, a small right-hand branch of Rich Creek, a tributary to Bluestone River.

**Poindexter**; branch, a small left-hand tributary to Hurricane Creek, a branch of Kanawha River, in Putnam County.

**Point**; mountain, a short ridge in Greenbrier County. Altitude, 3,500 feet.

**Point**; mountain, a broken, mountainous range in Webster and Randolph counties.

**Point**; mountain, a short ridge in Greenbrier and Pocahontas counties.

**Point**; mountain, a short ridge between Back Fork of Elk River and Elk River in Webster County.

**Point**; run, a left-hand branch of Little Wheeling Creek in Ohio County.

**Point Lick**; fork, a left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.

**Point Mountain**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.

**Point Pleasant**; county seat of Mason County on the Baltimore and Ohio and the Ohio Central railroads. Altitude, 563 feet. Population, 1,934.

**Points**; post village in Hampshire County.

**Pointy Knob**; summit in Tucker County. Altitude, 4,286 feet.

**Polandale**; post village in Wood County.

**Polard**; post village in Tyler County.

**Polemic**; run, a small left-hand tributary to Little Birch River in Braxton County.

**Poley Ridge**; short spur west of Greenbrier River in Greenbrier County. Altitude, 2,500 feet.

**Pollock**; mountain, a summit in Greenbrier County. Altitude, 3,900 feet.

**Pompeys Knob**; summit in Webster County north of Gauley River.

**Pond**; fork, a small left-hand branch of Middle Fork of Blue Creek, a tributary to Elk River, in Kanawha County.

**Pond**; fork, a right-hand head fork of Little Coal River, a branch of Coal River, in Boone County.

**Pond Gap**; height in Kanawha County.

**Pondgap**; post village in Kanawha County.

- Pond Lick**; creek, a small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.
- Pondlick**; post village in Mason County on the West Virginia Central and Pittsburg Railway.
- Pond Mill**; run, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Pond Range**; short ridge in the central part of Pendleton County. Altitude, 2,500 to 3,000 feet.
- Pond Trace**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Logan County.
- Pool**; post village in Nicholas County.
- Poplar**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Poplar**; fork, a small left-hand tributary to Kanawha River in Putnam County.
- Poplar**; post village in Webster County on the Baltimore and Ohio Railroad.
- Poplar Lick**; small left-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Poppa**; post village in Wayne County.
- Porter**; post village in Clay County on the Charleston, Clendennin and Sutton and the Porters Creek and Gauley railroads.
- Porter Knob**; summit in Cabell County. Altitude, 1,252 feet.
- Porter Knob**; summit in Wayne County. Altitude, 1,407 feet.
- Porters**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Porters**; creek, a left-hand tributary to Elk River in Clay County.
- Porters Falls**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Portersville**; post village in Lincoln County.
- Porterwood**; post village in Tucker County on the West Virginia Central and Pittsburg Railway.
- Posey**; run, a small right-hand branch of Oil Creek in Braxton County.
- Pot**; branch, a small left-hand tributary to Trace Fork of Davis Creek, a branch of Kanawha River, in Kanawha County.
- Potato**; branch, a very small right-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Potato**; hill, a summit on boundary line between Raleigh and Fayette counties. Altitude, 3,256 feet.
- Potato**; hill, a summit in Webster County.
- Potato Hill**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Potato Hole Knob**; summit in Webster County.
- Potomac**; river, heading in the northeastern part of the State, in two branches, North and South. North Branch heads near Fairfax Stone and flows northeast, forming a part of the north boundary of the State. After its junction with South Branch, some miles below Cumberland, it continues along the north boundary to Harpers Ferry, the easternmost point of the State.
- Potomac**; village in Ohio County.
- Pound**; fork, a very small right-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Pound Mill**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Pound Mill**; run, a small left-hand tributary to Valley River in Randolph County.
- Powell**; branch, a small left-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.

- Powell**; creek, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Powell**; fork, a small left-hand tributary to Leatherwood Fork of Elk River in Webster County.
- Powell**; mountains, a short ridge in Nicholas County. Its highest peak is 2,316 feet.
- Powell Knob**; summit in Gilmer County. Altitude, 1,460 feet.
- Powells**; post village in Marion County on the Baltimore and Ohio Railroad.
- Powellton**; fork, a right-hand branch of Armstrong Creek, a tributary to Kanawha River, in Fayette County.
- Powellton**; town in Fayette County on the Powellton and Pocahontas Railway and on Powellton Fork of Kanawha River. Population, 503. Altitude, 904 feet.
- Powers**; post village in Wood County.
- Powhatan**; post village in McDowell County on the Norfolk and Western Railway and on South Fork of Elkhorn Creek.
- Powley**; creek, a small right-hand tributary to Greenbrier River in Summers County.
- Pratt**; post village in Kanawha County, on the Chesapeake and Ohio Railway.
- Press Kincaid**; branch, a very small right-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Preston**; county, situated in the northern part of the State on the Allegheny Plateau, here not greatly dissected, and having an average elevation of about 3,000 feet. Area, 671 square miles. Population, 22,727—white, 22,565; negro, 162; foreign born, 482. County seat, Kingwood. The mean magnetic declination in 1900 was 3° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the West Virginia Northern and the Baltimore and Ohio railroads.
- Preston**; post village in Wayne County.
- Prestonia**; post village in Webster County.
- Pretty Ridge**; mountains in Wyoming County.
- Pretty Ridge**; short spur of North Fork Mountain in Pendleton County. Elevation, 2,000 feet.
- Price**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Price**; branch, a very small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Price**; fork, a small left-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas and Greenbrier counties.
- Pride**; post village in Mercer County.
- Priestly**; post village in Lincoln County.
- Prince**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,188 feet.
- Princeton**; county seat of Mercer County. Altitude, 2,450 feet.
- Pringle**; fork, a small left-hand tributary to Right Fork of Stone Coal Creek in Upshur County.
- Pringle**; run, a small left-hand tributary to Cheat River in Preston County.
- Pritchard**; post village in Ritchie County.
- Procious**; post village in Clay County.
- Proctor**; post village in Wetzel County on the Baltimore and Ohio Railroad.
- Proctors**; creek, a small left-hand branch of Ohio River in Wetzel County.
- Progress**; post village in Braxton County.
- Props**; gap in Long Ridge, caused by a small right-hand branch of the South Branch of Potomac River, in Pendleton County.
- Prospect Valley**; village in Harrison County.

**Prosperity**; post village in Raleigh County.

**Providence**; post village in Jackson County.

**Pruett**; branch, a very small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Pruntytown**; village in Taylor County.

**Pugh**; post village in Webster County.

**Pullman**; post village in Ritchie County.

**Puncheon Camp**; branch, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Purgitsville**; post village in Hampshire County.

**Pursley**; post village in Tyler County.

**Push**; post village in Doddridge County.

**Putnam**; county situated in the western part of the State on the lower slopes of the Allegheny Plateau; it is traversed by Kanawha River, which drains it. Area, 353 square miles. Population, 17,330—white, 16,951; negro, 379; foreign born, 107. County seat near Winfield. The mean magnetic declination in 1900 was  $1^{\circ} 15'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Kanawha and Michigan and the Chesapeake and Ohio railways.

**Pyle**; mountain, a short ridge west of Greenbrier River in Pocahontas County. Altitude, 2,500 to 3,275 feet, the latter being the height of one peak.

**Pyles**; fork, a small left-hand branch of Monongahela River in Monongalia County.

**Quaker Knob**; summit in Webster County. Altitude, 2,722 feet.

**Queens**; post village in Upshur County.

**Queens Camp**; fork, a small left-hand branch of Milam Creek, a tributary to East Fork of Twelvepole Creek, in Wayne County.

**Queen Shoal**; creek, a small left-hand tributary to Elk River in Clay County.

**Queens Ridge**; post village in Wayne County.

**Queer**; branch, a small left-hand tributary to Cranberry River in Webster County.

**Quiet Dell**; post village in Harrison County.

**Quincy**; post village in Kanawha County.

**Quinnimont**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 1,195 feet.

**Racine**; post village in Boone County. Altitude, 665 feet.

**Racoon**; creek, a small right-hand tributary to Teter Creek, a branch of Tygarts Valley River, in Barbour County.

**Racoon**; creek, a right-hand tributary to Valley River in Preston County.

**Raccoon**; creek, a small right-hand branch of Beech Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.

**Racy**; post village in Ritchie County.

**Radnor**; post village in Wayne County on the Norfolk and Western Railway.

**Rafe**; run, a very small left-hand tributary to Valley River in Randolph County.

**Ragland**; post village in Mingo County.

**Raider**; fork, a small left-hand tributary to Twenty Mile Creek in Nicholas County.

**Raines**; fork, a very small left-hand branch of Sycamore Creek, a tributary to Clear Fork of Coal River, in Raleigh County.

**Raleigh**; county, situated in the southern part of the State, on the Allegheny Plateau, here having an average elevation of 2,500 feet, and is not greatly dissected. It is drained by tributaries of the Kanawha and New rivers. Area, 560 square miles. Population, 12,436—white, 12,076; negro, 360; foreign born, 33. County seat, Beckley. The mean magnetic declination in 1900 was  $1^{\circ} 15'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ .

**Raleigh**; post village of Raleigh County on the Chesapeake and Ohio Railway. Altitude, 2,440 feet.

**Baleman**; mountain, a short ridge in Pendleton County. Altitude, 3,000 feet.

**Ralph**; branch, a very small right-hand tributary to Clear Fork, a branch of Guy-andot River, in Wyoming County.

**Ralston**; run, a small left-hand tributary to Valley River in Randolph County.

**Ramsey**; post village in Fayette County.

**Rams Horn**; spur of Allegheny Front in Pocahontas County.

**Randall**; post village in Monongalia County on the Baltimore and Ohio Railroad.

**Randolph**; county, situated in the eastern part of the State. The surface is entirely mountainous, the western part lying on the Allegheny Plateau, and the eastern part consisting of heavy parallel ridges, trending northeast and southwest, separated by limestone valleys. It is drained by tributaries to the North Branch of the Potomac and to the Monongahela River. Area, 1,086 square miles. Population, 17,670—white, 17,149; negro, 519; foreign born, 698. County seat, Elkins. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the West Virginia Central and Pittsburg Railway.

**Ranger**; post village in Lincoln County.

**Ranger**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.

**Batcliff**; run, a small left-hand tributary to Buckhannon River in Upshur County.

**Rattlesnake Draft**; very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Ravenrock**; post village in Pleasants County on the Baltimore and Ohio Railroad.

**Ravens Eye**; post village in Fayette County.

**Ravenswood**; town in Jackson County. Population, 1,074. Altitude, 544 feet.

**Raymond**; run, a right-hand tributary of North Fork of Fishing Creek in Wetzel County.

**Raymond City**; post village in Putnam County on the Ohio Central Lines.

**Read**; fork, a left-hand tributary to Grass Run in Gilmer County.

**Reader**; creek, a right-hand branch of Fishing Creek in Wetzel County.

**Reader**; post village in Wetzel County on the Baltimore and Ohio Railroad.

**Real Gap**; height in Little Mountain in Grant County.

**Red**; creek, a right-hand tributary to Dry Fork of Cheat River in Tucker and Randolph counties.

**Redbird**; post village in Raleigh County.

**Red Bridge**; run, a small left-hand tributary to Shavers Fork of Cheat River in Randolph County.

**Redcreek**; post village in Tucker County.

**Redhill**; post village in Wood County.

**Redhouse Shoals**; post village in Putnam County on the Ohio Central Lines.

**Redknob**; post village in Roane County.

**Red Lick**; mountain, a short ridge in Pocahontas County. The altitude of one peak is 4,671 feet.

**Red Lick**; small left-hand tributary to Oil Creek in Lewis County.

**Redmud**; post village in Mason County.

**Red Oak**; creek, a small right-hand tributary to North Branch of Potomac River in Grant County.

**Red Oak Knob**; summit in Webster County. Altitude, 3,750 feet.

**Red Oak Ridge**; mountains in Mercer County.

**Red River**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guy-andot River, in Lincoln County.

**Redstar**; station in Fayette County on the Chesapeake and Ohio Railway and on Dunloup Creek, a tributary to New River.

**Red Sulpher Springs**; post village in Monroe County.



- Reed**; creek, a left-hand tributary to South Branch of Potomac River in Pendleton County.
- Reeds**; creek, a small left-hand tributary to North Fork of Potomac River in Pendleton County.
- Reedsville**; post village in Preston County.
- Reedy**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Reedy**; branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Reedy**; town in Roane County on the Baltimore and Ohio Railroad. Population, 300.
- Reedyripple**; post village in Wirt County.
- Reedyville**; post village in Roane County.
- Reeses Mill**; post village in Mineral County.
- Reid**; post village in Cabell County.
- Removal**; post village in Webster County.
- Rena**; post village in Putnam County.
- Rend**; post village in Fayette County.
- Renicks Valley**; post village in Greenbrier County, on the Chesapeake and Ohio Railway.
- Renius**; post village in Wood County.
- Replete**; post village in Webster County.
- Reuben**; right-hand branch of Pritchett Creek in Marion County.
- Revel**; post village in Gilmer County.
- Revere**; post village in Gilmer County.
- Rex**; post village in Putnam County.
- Rezrode**; post village in Pendleton County.
- Reynolds**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Reynoldsville**; post village in Harrison County.
- Rhine**; fork, a head tributary to Youghiogheny River in Preston County.
- Rice**; post village in Wayne County.
- Rices**; run, a left-hand branch of Garrison Run in Ohio County.
- Rich**; branch, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Rich**; creek, a very small left-hand tributary to Guyandot River in Wyoming County.
- Rich**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Rich**; creek, a left-hand tributary to Bluestone River in Mercer County.
- Rich**; creek, a small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Rich**; creek, a small right-hand tributary to New River in Monroe County.
- Rich**; knob in Cabell County. Altitude, 1,047 feet.
- Rich**; mountain, a ridge lying west of Valley River in the northwestern part of Randolph County.
- Rich**; mountain, a ridge lying east of Laurel Fork of Cheat River in the eastern part of Randolph County.
- Rich**; post village in Logan County.
- Richardson**; post village in Calhoun County.
- Rich Knob**; summit in Greenbrier County. Altitude, 3,848 feet.
- Richlands**; post village in Greenbrier County.
- Rich Mountain**; post village in Randolph County.
- Rich Patch**; creek, a small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.



- Richwood**; post village in Nicholas County, on the Baltimore and Ohio Railroad.
- Richwood**; run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Riddle**; branch, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Riddleboch**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.
- Ridersville**; post village in Morgan County.
- Ridge**; post village in Morgan County.
- Ridgedale**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Ridgeley**; post village in Mineral County on the West Virginia Central and Pittsburgh Railway.
- Ridgeville**; post village in Mineral County.
- Ridgeway**; village in Berkeley County on the Cumberland Valley Railroad.
- Rifle**; branch, an indirect right-hand tributary to Tommy Creek, a head fork of Guyandot River, in Raleigh County.
- Rifle**; run, a small right-hand tributary to Little Kanawha River in Braxton County.
- Riffles**; creek, a small right-hand tributary to Valley River in Randolph County.
- Riggs**; branch, a very small right-hand tributary to Kanawha River in Fayette County.
- Rilla**; post village in Calhoun County.
- Rinehart**; post village in Harrison County.
- Riney**; mountain in Cabell County. Altitude, 1,107 feet.
- Ring**; branch, a small right-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Rio**; post village in Hampshire County.
- Ripley**; county seat of Jackson County on the Baltimore and Ohio Railroad. Population, 579.
- Rippon**; post village in Jefferson County on the Norfolk and Western Railway. Altitude, 516 feet.
- Rising Sun**; branch, a small left-hand tributary to Little Bluestone Creek, a branch of Bluestone River, in Summers County.
- Ritchie**; county, situated in the western part of the State, near the foot of the Allegheny Plateau. Area, 457 square miles. Population, 18,901—white, 18,875; negro, 26; foreign born, 120; county seat, Harrisville. The mean magnetic declination in 1900 was 2°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Baltimore and Ohio Railroad.
- Ritter**; post village in McDowell County at junction of upper Shannon Branch with Tug Fork of Big Sandy River.
- River**; fork, a left-hand tributary to Coal River in Boone County.
- River**; run, a left-hand branch of Tygart Valley River in Marion County.
- River Laurel**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- River Road**; run, a very small right-hand tributary to Greenbrier River in Summers County.
- Riverside**; post village in Kanawha County.
- Riverton**; post village in Pendleton County.
- Rivesville**; town in Marion County. Population, 164.
- Roach**; branch, a small left-hand tributary to West Fork, a branch of Pond Fork of Little Coal Creek, in Boone County.
- Roach**; post village in Cabell County.
- Road**; branch, a very small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.

- Roach**; branch, a small right-hand tributary to Cranberry River in Webster County.
- Roach**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Roach**; fork, a small left-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Roach**; fork, a small left-hand branch of Peters Cave Fork of Horse Creek, a tributary to Little Coal River, in Lincoln County.
- Roach**; fork, a left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Roach**; fork, a small left-hand branch of Big Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Roach**; fork, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Roach**; fork, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay and Nicholas counties.
- Roach**; fork, a small right-hand branch of Seng Camp Creek, a tributary to Spruce Fork of Little Coal River, in Logan County.
- Roach**; fork, a small right-hand branch of Fuqua Creek, a tributary to Coal River, in Lincoln County.
- Roach**; fork, a small right-hand branch of Rock Camp Fork of Twentymile Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Roach**; fork, a small right-hand branch of Left Fork of Witchers Creek, a tributary to Kanawha River, in Kanawha County.
- Roach**; fork, a right-hand branch of Grove Creek in Clay County.
- Roach**; run, a small left-hand branch of Oil Creek in Braxton County.
- Roach**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Roane**; county, situated in the western part of the State near the foot of the Allegheny Plateau. Area, 547 square miles. Population, 19,852—white, 19,820; negro, 32; foreign born, 52. County seat, Spencer. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ . The county is traversed by the Ohio River Railroad.
- Roanoke**; post village in Lewis County on the Baltimore and Ohio Railroad. Altitude, 1,053 feet.
- Roaring**; creek, a small left-hand tributary to Seneca Creek, a branch of North Fork of Potomac River, in Pendleton County.
- Roaring**; creek, a small right-hand branch of Valley River in Randolph County.
- Roaring**; plains, summit near the Allegheny Front, lying on the boundary line between Randolph and Pendleton counties.
- Robbins**; fork, a small left-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.
- Roberts**; post village in Doddridge County.
- Roberts**; run, a left-hand branch of Long Drain in Wetzel County.
- Robertsburg**; post village in Putnam County on the Ohio Central Lines.
- Robertson**; right-hand branch of Tygarts Valley River in Marion County.
- Robinette**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Robinette**; branch, a very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.
- Robinson**; branch, a very small left-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Robinson**; creek, a small right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.

- Robinson**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas and Clay counties.
- Robinson**; fork, a small left-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Robinson**; run, a left-hand branch of Monongahela River in Monongalia County.
- Robinson**; run, a small left-hand branch of the Right Fork of Holly River in Braxton County.
- Robinson**; run, a right-hand branch of Lunice Creek, a tributary to South Branch of Potomac River, in Grant County.
- Robinson Gap**; height in Grant County.
- Robinsons Mill**; post village in Wetzel County.
- Robson**; post village in Fayette County.
- Rock**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Rock**; branch, a small left-hand tributary to Beaver Creek, a branch of Piney Creek, in Raleigh County.
- Rock**; creek, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Rock**; creek, a right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Rock**; post village in Mercer County.
- Rock**; run, a small left-hand tributary to Greenbrier River in Pocahontas County.
- Rock**; run, a right-hand branch of Sand Fork in Lewis County.
- Rock Camp**; branch, a small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Rock Camp**; creek, a small, indirect left-hand tributary to Indian Creek in Monroe County.
- Rock Camp**; fork, a right-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas and Clay counties.
- Rock Camp**; fork, a right-hand branch of Bell Creek, a tributary to Gauley River, in Clay County.
- Rock Camp**; fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Rock Camp**; mountain, a short ridge in Greenbrier County.
- Rockcamp**; post village in Monroe County.
- Rock Camp**; run, a small left-hand branch of Spring Creek, a tributary to Greenbrier River, in Greenbrier County.
- Rock Camp**; run, a small right-hand tributary to Elk River in Braxton County.
- Rock Camp**; run, a very small right-hand tributary to Gauley River in Nicholas County.
- Rock Camp**; run, a left-hand branch of Tanner Creek in Gilmer County.
- Rock Camp Knob**; summit in Greenbrier County.
- Rock Castle**; creek, a small right-hand branch of Guyandot River in Wyoming County.
- Rockcastle**; post village in Jackson County.
- Rockcave**; post village in Upshur County.
- Rockford**; post village in Harrison County.
- Rockgap**; post village in Morgan County.
- Rock House**; branch, a very small left-hand tributary to Gauley River in Webster County.
- Rockhouse**; branch, a small left-hand tributary to Tug River in McDowell County.
- Rockhouse**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.

- Rockhouse**; branch, a small left-hand branch of Road Fork, a tributary to Trace Fork of Mud River, in Lincoln County.
- Rockhouse**; branch, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Rockhouse**; branch, a small right-hand tributary to Elkhorn Creek in McDowell County.
- Rockhouse**; branch, a very small right-hand tributary to Island Creek, a branch of Guyandot River, in Logan County.
- Rockhouse**; creek, a small left-hand branch of Mud Fork of Guyandot River, a tributary to Ohio River, in Logan County.
- Rockhouse**; creek, a very small left-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Rockhouse**; creek, a small right-hand branch of Clear Fork, a tributary to Coal River, in Raleigh County.
- Rockhouse**; fork, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Logan County.
- Rockhouse**; fork, a small left-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Rockhouse**; fork, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Rockhouse**; fork, a right-hand tributary to Pigeon Creek, a branch of Tug Fork of Big Sandy River, in Logan County.
- Rockhouse**; fork, a head fork of Dingus Run, a tributary to Guyandot River, in Logan County.
- Rockland**; post village in Hardy County on the Chesapeake and Ohio Railway.
- Rocklick**; branch, a very small right-hand tributary to Pond Fork of Little Coal River in Boone County.
- Rock Lick**; a small left-hand branch of Arbuckle Creek, a tributary to New River, in Fayette County.
- Rock Lick**; a small right-hand tributary to Williams River in Webster County.
- Rocklick**; fork; a small left-hand tributary to Leatherwood Creek, a small branch of Elk River, in Clay County.
- Rocklick**; post village in Marshall County.
- Rocklick**; run, a right-hand branch of Buffalo Creek in Marion County.
- Rock Narrow**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Rockoak**; post village in Hardy County.
- Rockport**; post village in Wood County.
- Rockruffle**; run, a right-hand tributary of Little Kanawha River in Gilmer County.
- Rocksdale**; post village in Calhoun County.
- Rockview**; post village in Wyoming County.
- Rockville**; post village in Preston County.
- Rocky**; fork, a left-hand branch of Pocotaligo River, a tributary to Kanawha River, in Kanawha County.
- Rocky**; fork, a left-hand tributary to Indian Fork in Gilmer and Lewis counties.
- Rocky**; run, a very small left-hand branch of Big Laurel Creek, a tributary to Cherry River, in Greenbrier County.
- Rocky**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Rocky**; run, a small right-hand tributary to Williams River in Webster County.
- Rocky**; run, a small right-hand branch of Thorn Run, a tributary to South Branch of Potomac River, in Pendleton County.
- Rockyfork**; post village in Kanawha County.
- Rocky Knob**; summit in Putnam County. Altitude, 1,170 feet.
- Rodamers**; post village in Preston County.

- Boderfield**; post village in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Bodgers**; mountain, a summit in Pocahontas County. Altitude, 3,176 feet.
- Boe**; post village in Kanawha County.
- Bohr**; post village in Preston County.
- Boller**; fork, a small right-hand branch of Kiah Fork, a tributary to Twelvepole Creek, in Wayne County.
- Rollins**; post village in Mason County.
- Rome**; post village in Kanawha County.
- Romines Mills**; post village in Harrison County.
- Romney**; county seat of Hampshire County on the Baltimore and Ohio Railroad. Population, 580.
- Romont**; post village in Fayette County.
- Ronceverte**; town in Greenbrier County on Greenbrier River and on the Chesapeake and Ohio Railway. Population, 968. Altitude, 1,663 feet.
- Ronda**; post village in Kanawha County.
- Roneyspoint**; post village in Ohio County on the Baltimore and Ohio Railroad. Altitude, 829 feet.
- Roneyspoint**; run, a right-hand branch of Little Wheeling Creek in Ohio County.
- Book**; branch, a very small right-hand tributary to Left Fork of Mud River in Lincoln County.
- Boose**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Borebagh**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.
- Rosbysrock**; post village in Marshall County. Altitude, 787 feet.
- Rose**; branch, a very small right-hand tributary to Little Huff Creek, a branch of Guyandot River, in Wyoming County.
- Rosedale**; post village in Braxton County.
- Rosen**; creek, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Roseville**; post village in Fayette County.
- Rosina**; post village in Kanawha County.
- Ross**; post village in Wetzel County.
- Ross**; run, a small right-hand tributary to Salt Lick Fork of Little Kanawha River in Braxton County.
- Rough**; run, a small right-hand tributary to Cranberry River in Webster County.
- Rough**; run, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Rough**; run, a small right-hand tributary to Left Fork of Middle Fork of Valley River in Randolph County.
- Rough Gap**; run, a very small right-hand tributary to Elk River in Randolph County.
- Round Bottom**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Roundbottom**; post village in Wayne County on the Baltimore and Ohio Railroad.
- Roundknob**; post village in Putnam County.
- Round Knob**; summit in Pocahontas County.
- Round Knob**; summit in Raleigh County.
- Round Knob**; summit in Randolph County.
- Rover**; post village in Wirt County.
- Rowlesburg**; town in Preston County on the Baltimore and Ohio Railroad. Altitude, 1,402 feet. Population, 652.

**Roxalana**; post village in Roane County.

**Roy**; post village in Roane County.

**Rubens**; branch, a left-hand branch of Buck Fork of Twelvepole Creek in Wayne County.

**Rucker**; branch, a very small right-hand tributary to Little Coal River, a branch of Coal River, in Boone County.

**Ruckman**; post village in Hampshire County.

**Ruddle**; post village in Pendleton County.

**Ruffner**; branch, a small left-hand tributary to Little Sandy Creek, a small branch of Elk River, in Kanawha County.

**Ruffner**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.

**Rugger**; run, a small left-hand tributary to Right Fork of Buckhannon River in Upshur County.

**Rum**; creek, a small right-hand tributary to Guyandot River in Logan County.

**Rupert**; post village in Greenbrier County.

**Ruraldale**; post village in Upshur County.

**Rush**; creek, a very small left-hand tributary to Kanawha River in Kanawha County.

**Rush**; fork, a small right-hand tributary to Elk River in Braxton County.

**Rush**; run, a small left-hand tributary to Monongahela River in Lewis County.

**Rush**; run, a very small left-hand tributary to New River in Fayette County.

**Rush Knob**; summit in Lewis County. Altitude, 1,642 feet.

**Rushrun**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River.

**Rushville**; post village in Roane County.

**Rusk**; post village in Ritchie County.

**Russell**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Russellville**; post village in Fayette County. Altitude, 1,092 feet.

**Russet**; post village in Calhoun County.

**Ruth**; post village in Kanawha County.

**Rutherford**; post village in Ritchie County on the Cairo and Kanawha Valley Railroad.

**Ryan**; post village in Roane County.

**Rye**; post village in Wood County.

**Rymer**; village in Marion County.

**Sago**; post village in Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,425 feet.

**Saint Albans**; town in Kanawha County on the Chesapeake and Ohio Railroad. Population, 816. Altitude, 593 feet.

**Saint Clara**; post village in Doddridge County.

**Saint Cloud**; post village in Monongalia County.

**Saint George**; town in Tucker County. Population, 152.

**Saint Joseph**; post village in Marshall County.

**Saint Leo**; post village in Monongalia County.

**Saint Marys**; county seat of Pleasants County on the Baltimore and Ohio Railroad. Population, 825.

**Salama**; post village in Pleasants County on the Baltimore and Ohio Railroad.

**Salem**; town in Harrison County on the Baltimore and Ohio Railroad. Population, 746.

**Sally**; run, a small right-hand tributary to Gauley River in Webster County.

**Salt Block**; run, a small right-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.

- Salt Lick**; branch, a very small left-hand tributary to New River in Fayette County.
- Salt Lick**; fork, a left-hand branch of Little Kanawha River in Braxton County.
- Salt Lick**; run, a small left-hand tributary to Leading Creek in Randolph County.
- Saltlick Bridge**; post village in Braxton County.
- Salt Rock**; post village in Cabell County on the Chesapeake and Ohio Railway.
- Salt Sulphur**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Salt Sulphur Springs**; post village in Monroe County.
- Saltwell**; village in Harrison County.
- Sam**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Sam**; branch, a small right-hand branch of Big Clear Creek, a tributary to Meadow River, in Greenbrier County.
- Samaria**; post village in Marion County.
- Sammy**; run, a left-hand branch of Sand Fork in Lewis County.
- Samp**; post village in Webster County.
- Sam Ridge**; short spur between Big Clear Creek and its branch, Sam Creek, in Greenbrier County.
- Sancho**; post village in Tyler County.
- Sand**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Sand**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Sand**; fork, a small left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Sand**; fork, a small right-hand branch of Paint Creek, a tributary to Kanawha River, in Raleigh County.
- Sand**; fork, a right-hand branch of West Fork of Monongahela River in Lewis County.
- Sand**; fork, a small right-hand branch of Buffalo Creek, a tributary to Elk River, in Clay County.
- Sand**; fork, a right-hand branch of Little Kanawha River in Lewis and Gilmer counties. It rises in Lewis County and flows southwestward to its junction with Sand Fork in Gilmer County.
- Sand**; river, a small right-hand tributary to Gauley River in Webster County.
- Sand**; run, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Kanawha County.
- Sand**; run, a small right-hand tributary to French Creek in Upshur County.
- Sand**; run, a right-hand head fork of Laurel Fork of French Creek in Upshur County.
- Sanders**; post village in Wyoming County.
- Sandfork**; post village in Gilmer County situated on Little Kanawha River.
- Sandhill**; post village in Marshall County.
- Sand Lick**; branch, a small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Sandlick**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Sand Lick**; branch, a very small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Sand Lick**; branch, a very small right-hand tributary to Bluestone River in Mercer County.
- Sand Lick**; creek, a right-hand branch of Marsh Fork of Coal River in Raleigh County.



- Sand Lick**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Sandlick**; fork, a left-hand branch of Laurel Creek, a tributary to Coal River, in Boone County.
- Sandlick**; run, a right-hand branch of Right Fork of Simpson Creek in Taylor County.
- Sand Ridge**; hill west of the South Branch of Potomac River in Pendleton County.
- Sandrun**; post village in Upshur County.
- Sandusky**; post village in Tyler County.
- Sandy**; creek, a small left-hand branch of Ohio River in Jackson County.
- Sandy**; creek, a right-hand branch of Valley River formed by two forks, Little and Big Sandy creeks, forming boundary line between Taylor and Barbour and between Barbour and Preston counties.
- Sandy**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Sandy Huff**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Sandy Huff**; post village in McDowell County.
- Sandy Ridge**; short ridge in Pendleton County. Altitude, 2,500 to 3,000 feet.
- Sandy Ridge**; mountains in Hampshire County.
- Sandy Ridge**; short range east of Greenbrier River in Pocahontas County.
- Sandyville**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Sang**; run, a left-hand head fork of Laurel Fork of French Creek in Upshur County.
- Sangamore**; fork, a small right-hand branch of Open Fork of Bell Creek, a tributary to Gauley River, in Clay County.
- Sanoma**; post village in Wirt County.
- Santifee**; post village in Summers County.
- Sapp**; run, a right-hand branch of Booths Creek in Marion County.
- Sarah**; post village in Cabell County.
- Sardis**; post village in Harrison County.
- Sassafras**; post village in Mason County.
- Sattes**; post village in Kanawha County on the Ohio Central Lines.
- Saulsbury**; post village in Wood County.
- Saulsbury**; run, a small left-hand branch of Deer Creek, a tributary to North Fork of Greenbrier River, in Pocahontas County.
- Saulsville**; post village in Wyoming County.
- Saunders**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Savage**; post village in Mineral County.
- Savanah**; post village in Greenbrier County.
- Saw Mill**; run, a small left-hand tributary to Buckhannon River in Upshur County.
- Sawyer**; run, a small left-hand tributary to Back Fork of Elk River in Webster County.
- Saxon**; post village in Raleigh County.
- Scab**; run, a right-hand branch of Tygarts Valley River in Taylor County.
- Scary**; creek, a very small left-hand tributary to Middle Fork of Mud River in Lincoln County.
- Scary**; creek, a small left-hand tributary to Kanawha River in Putnam County.
- Scary**; post village in Putnam County on the Chesapeake and Ohio Railway. Altitude, 591 feet.
- Scheidler**; run, a right-hand branch of Little Fishing Creek in Wetzel County.
- Scherr**; post village in Grant County.
- Schilling**; post village in Roane County.
- Schoolcraft**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River, in Randolph County.

- Schoolhouse**; branch, a very small right-hand tributary to Pocotaligo River, a branch of Kanawha River, in Kanawha County.
- Schoolhouse**; branch, a small right-hand tributary to Twomile Creek, a branch of Guyandot River, in Lincoln County.
- Schoolhouse**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Schoolhouse**; fork, a small, indirect left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Schoolhouse**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Schoolhouse**; run, a left-hand tributary to Indian Fork in Gilmer County.
- Schoonover Knob**; summit in Clay County. Altitude, 1,595 feet.
- Schultz**; post village in Pleasants County.
- Scidmore**; run, a very small left-hand tributary to Elk River in Braxton County.
- Scott**; branch, a very small left-hand tributary to Fields Creek, a branch of Kanawha River, in Kanawha County.
- Scott**; branch, a very small left-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Scott**; fork, a left-hand fork of Westfall Fork of Cedar Creek in Braxton County.
- Scott**; post village in Wood County on the Chesapeake and Ohio Railway. Altitude, 694 feet.
- Scott**; run, a left-hand branch of Buffalo Creek in Brooke County.
- Scottdale**; post village in Marion County.
- Scott Depot**; post village in Putnam County.
- Scotts**; branch, a small left-hand tributary to Rich Creek, a branch of New River, in Monroe County.
- Scotts**; run, a left-hand branch of Miracle Run in Monongalia County.
- Scrabble**; creek, a small right-hand tributary to Gauley River in Fayette County.
- Scrafford**; post village in Monongalia County.
- Scratchers**; run, a left-hand branch of Prickett Run in Marion County.
- Seaman**; post village in Roane County on the Baltimore and Ohio Railroad.
- Second**; branch, a left-hand branch of Hurricane Creek in Putnam County.
- Second**; creek, a left-hand branch of Greenbrier River in Monroe and Greenbrier counties.
- Second Big**; run, a small right-hand tributary to Oil Creek in Lewis County.
- Secondcreek**; post village in Monroe County.
- Sedalia**; post village in Doddridge County.
- Sedan**; post village in Hampshire County.
- See All**; summit in Pocahontas County.
- Seebert**; post village in Pocahontas County, on the Chesapeake and Ohio Railway.
- See Camp**; gap in hills caused by Schoolcraft Run, a small tributary to Monongahela River, in Randolph County.
- Seemly**; post village in Grant County.
- Selbyville**; post village in Upshur County.
- Sell**; post village in Preston County.
- Senate**; branch, a right-hand branch of Lilly Fork of Buffalo Creek, a tributary to Elk River, in Clay County.
- Seneca**; creek, a left-hand tributary to North Fork of Potomac River in Pendleton County.
- Seneca**; creek, a right-hand branch of North Fork of Potomac River in Pendleton County.
- Seneca**; town in Monongalia County. Population, 723.
- Seng**; branch, a very small left-hand tributary to Mulberry Fork of Loop Creek, a branch of Kanawha River, in Fayette County.
- Seng**; creek, a very small right-hand tributary to Coal River in Boone County.

- Seng**; fork, a small right-hand tributary to Hopkins Fork of Laurel Creek, a branch of Coal River, in Boone County.
- Seng**; post village in Logan County.
- Seng Camp**; creek, a small right-hand tributary to Spruce Fork of Little Coal River in Logan County.
- Serena**; post village in Clay County.
- Servia**; post village in Braxton County.
- Seth**; post village in Boone County.
- Settle**; post village in Mason County.
- Sevenmile**; creek, a small left-hand tributary to Ohio River in Cabell County.
- Sevenpines**; village in Marion County.
- Sewell**; creek, a small left-hand tributary to Meadow River in Greenbrier County.
- Sewell**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 1,003 feet.
- Seymourville**; post village in Grant County.
- Shabby Room**; branch, a very small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Shad**; post village in Roane County.
- Shadrick**; fork, a right-hand branch of Hughes Creek, a tributary to Kanawha River, in Kanawha County.
- Shadyspring**; post village in Raleigh County.
- Shafter**; post village in Pendleton County.
- Shamblings Mills**; post village in Roane County.
- Shanghai**; post village in Berkeley County.
- Shanks**; post village in Hampshire County.
- Shannon**; post village in Ohio County.
- Shannon Mill**; creek, a very small right-hand tributary to Guyandot River in Wyoming County.
- Sharp Knob**; summit in Pocahontas County. Altitude, 4,545 feet.
- Shaver**; fork, a right fork of Westfall Fork of Cedar Creek in Braxton County.
- Shavers**; mountain, a ridge east of Shavers Fork of Cheat River in Randolph County.
- Shavers**; run, a small right-hand tributary to Valley River in Randolph County.
- Shaw**; post village in Mineral County on the West Virginia Central and Pittsburg Railway. Altitude, 1,290 feet.
- Shawnee**; post village in Pleasants County.
- Sheep**; run, a left-hand branch of North Fork of Fishing Creek in Wetzel County.
- Shelby**; run, a left-hand branch of Berkeley Run in Taylor County.
- Shell Camp Ridge**; narrow, broken mountains between Big Clear Creek and Smokehouse Branch, a fork of Big Clear Creek, in Greenbrier County. Altitude, 4,000 feet.
- Shelley**; post village in Clay County.
- Shelton**; post village in Clay County on the Charleston, Clendennin and Sutton Railroad.
- Shenandoah**; mountain, a broken range of mountains originating in Bath County, Virginia, and extending northeasterly through Hardy and Hampshire counties, West Virginia. Altitude, 1,500 to 3,000 feet.
- Shenandoah Junction**; post village in Jefferson County on the Baltimore and Ohio and Norfolk and Western railroads. Altitude, 512 feet.
- Shenango**; creek, a right-hand branch of Fishing Creek in Wetzel County.
- Shepherd Spring**; branch, a small right-hand tributary to Dunloup Creek, a branch of New River, in Raleigh County.
- Shepherdstown**; town in Jefferson County on the Norfolk and Western Railway. Population, 1,184.
- Sheppard**; post village in Mingo County.

- Sheridan**; post village in Lincoln County on the Chesapeake and Ohio Railway.
- Sherman**; post village in Jackson County on the Baltimore and Ohio Railroad.
- Sherrard**; post village in Marshall County.
- Shiloh**; post village in Tyler County.
- Shinnston**; town in Harrison County. Population, 535.
- Shirkey**; branch, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Shirley**; post village in Tyler County.
- Shoal**; branch, a very small right-hand tributary to Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Shoals**; post village in Wayne County, on the Norfolk and Western Railway.
- Shock**; post village in Braxton County.
- Shock**; run, a small left-hand branch of Suttleton Creek, a tributary to Greenbrier River, in Pocahontas County.
- Shockley**; branch, a small left-hand tributary to Millers Camp Branch of Marsh Fork of Coal River in Raleigh County.
- Shock Mill**; fork, a small left-hand tributary to Right Fork of Steer Creek in Braxton County.
- Shooks**; run, a small right-hand tributary to Moorefield River in Hardy County.
- Shoomaker Knob**; summit in Greenbrier County.
- Shop**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Shops**; post village in Putnam County.
- Short**; branch, a small right-hand tributary to Fifteenmile Fork of Cabin Creek, a branch of Kanawha River, in Kanawha County.
- Short**; branch, a small left-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Short**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Short**; creek, a left-hand branch of Ohio River in Ohio County.
- Short**; creek, a very small right-hand branch of Wolf Creek, a tributary to New River, in Fayette County.
- Short**; creek, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Short**; mountain, a summit in Greenbrier County.
- Short**; mountain in Morgan County. Elevation, 1,388 feet.
- Short**; run, a small right-hand tributary to Middle Fork of Tygarts Valley River in Randolph County.
- Short**; run, a very small right-hand tributary to Left Fork of Buckhannon River in Randolph County.
- Short Bend**; creek, a small right-hand branch of Little Hart Creek, a tributary to Guyandot River, in Lincoln County.
- Short Bend**; fork, a small right-hand branch of Fourteenmile Creek, a tributary to Guyandot River, in Lincoln County.
- Shortcreek**; post village in Brooke County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway.
- Short Pole**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Shreeve**; run, a very small left-hand tributary to Little Kanawha River in Braxton County.
- Shrewsbury**; post village in Kanawha County.
- Shriner**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Shryock**; post village in Greenbrier County.

- Shumate**; branch, a small left-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Siberia**; post village in Mercer County.
- Sidney**; post village in Wayne County.
- Sigman**; post village in Putnam County.
- Siloam**; post village in Mason County.
- Silverhill**; post village in Wetzel County.
- Silverton**; post village in Jackson County, on the Baltimore and Ohio Railroad.
- Simmon**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Simmon**; run, a small left-hand tributary to Right Fork of Buckhannon River in Upshur County.
- Simmons**; branch, a very small left-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.
- Simmons**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Simmons**; creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Simmons**; mountain, a short ridge between Dry Run and Hammer Run, left-hand branches of South Branch of the Potomac, in Pendleton County.
- Simoda**; post village in Pendleton County.
- Simon**; branch, a very small right-hand tributary to Middle Fork of Mud River in Lincoln County.
- Simons**; post village in Barbour County.
- Simpson**; post village in Taylor County, on the Baltimore and Ohio Railroad.
- Simpson**; run, a small right-hand branch of Little Sandy Creek in Preston County.
- Sims**; branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Raleigh County.
- Sincerity**; post village in Wetzel County.
- Sinclair**; post village in Preston County.
- Sinking**; creek, a right-hand branch of Little Kanawha River in Gilmer County.
- Sinking**; creek, a small stream in Greenbrier County, rising in Big Clear Mountain. It flows southward a short distance and sinks.
- Sinks Grove**; post village in Monroe County.
- Sioto**; post village in Lincoln County.
- Sir Johns**; run, a right-hand branch of Potomac River in Morgan County.
- Sir Johns Run**; post village in Morgan County, on the Baltimore and Ohio Railroad.
- Sissonville**; post village in Kanawha County.
- Sistersville**; city in Tyler County. Population, 2,979.
- Sixmile**; creek, a small left-hand branch of Lens Creek, a tributary to Kanawha River, in Kanawha County.
- Sixmile**; creek, a small left-hand tributary to Spruce Fork of Little Coal River in Boone County.
- Sixmile**; creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Sixmile**; post village in Boone County.
- Skelt**; post village in Webster County.
- Skidmore**; post village in Jackson County.
- Skidmore**; run, a small right-hand branch of Little Kanawha River in Gilmer County.
- Skillet**; creek, a very small right-hand tributary to Gilbert Creek, a branch of Guyandot River, in Mingo County.
- Skin**; creek, a right-hand tributary to West Fork of Monongahela River in Lewis County.

- Skin**; fork, a small left-hand tributary to Pond Fork of Little Coal River in Boone County.
- Skin**; fork, a very small right-hand tributary to Guyandot River in Wyoming County.
- Skinner**; fork, a small left-hand tributary to Surveyor Fork, a branch of Marsh Fork of Coal River, in Raleigh County.
- Skin Poplar**; branch, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Skin Poplar**; gap, a height in Guyandot Mountain in Raleigh County. Altitude, 2,360 feet.
- Skitter**; creek, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Skull Run**; post village in Jackson County.
- Skyle**; creek, a small right-hand tributary to Birch River in Webster County.
- Skyles**; post village in Webster County.
- Slab**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Slab**; fork, a right-hand tributary to Guyandot River in Raleigh and Wyoming counties.
- Slab Camp**; creek, a small left-hand tributary to Greenbrier River in Greenbrier County.
- Slab Camp**; fork, a left-hand branch of French Creek, a tributary to Buckhannon River, in Upshur County.
- Slab Camp**; mountain, a short ridge in Greenbrier County. Altitude, 3,000 to 3,050 feet.
- Slab Camp**; run, a small right-hand tributary to Williams River in Webster County.
- Slab Creek**; run, a small right-hand branch of Cedar Creek in Braxton County.
- Slack**; branch, a small left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- Slanesville**; post village in Hampshire County.
- Slap Camp**; run, a right-hand tributary of Right Fork of Skin Creek in Gilmer County.
- Slash Lick**; creek, a small left-hand tributary to Howards Creek, a branch of Greenbrier River, in Greenbrier County.
- Slate**; post village in Wood County.
- Slate Lick**; small right-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Slate Lick Knob**; summit in Pocahontas County.
- Slater**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Slater**; creek, a very small right-hand tributary to New River in Fayette County.
- Slater**; station in Fayette County on the Chesapeake and Ohio Railway and at junction of Slater Creek and New River. Altitude, 1,108 feet.
- Slaty**; fork, a small right-hand branch of Old Field Fork of Elk River in Pocahontas County.
- Slatyfork**; post village in Pocahontas County.
- Slaty Ridge**; broken mountainous country in Pocahontas County.
- Slaughter**; creek, a small left-hand tributary to Kanawha River in Kanawha County.
- Slaunch**; fork, a left-hand head fork of Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Sleepy**; creek, a small left-hand tributary to Hurricane Creek, a branch of Kanawha River, in Putnam County.
- Sleepy**; creek, a right-hand branch of Potomac River in Morgan County.
- Sleepy Creek**; mountain in Berkeley and Morgan counties. Elevation, 1,800 feet.

**Sleith**; post village in Braxton County.

**Sleps**; branch, a very small right-hand tributary to Elk River in Webster County.

**Slick Rock**; branch, a very small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.

**Slick Rock**; branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Sliding Hill**; run, a small right-hand branch of Little Kanawha River in Gilmer County.

**Slipcamp**; run, a right-hand branch of Indian Fork Run in Gilmer County.

**Slippery Gut**; branch, a small left-hand tributary to Little Coal River, a branch of Coal River and indirect tributary to Kanawha River, in Boone County.

**Sloan**; post village in Wood County.

**Slowers**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Smith**; branch, a small right-hand branch of Bell Creek, a tributary to Gauley River, in Fayette County.

**Smith**; branch, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.

**Smith**; branch, a very small left-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.

**Smith**; branch, a very small left-hand tributary to New River in Mercer County.

**Smith**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Kanawha County.

**Smith**; creek, a left-hand tributary to South Branch of Potomac River in Pendleton County.

**Smith**; creek, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Smithers**; creek, a small right-hand tributary to Kanawha River in Kanawha and Fayette counties.

**Smithfield**; post village in Wetzel County on the Baltimore and Ohio Railroad.

**Smithton**; post village in Doddridge County on the Baltimore and Ohio Railroad. Altitude, 795 feet.

**Smithville**; post village in Ritchie County.

**Smoke Camp Knob**; summit in Pocahontas County.

**Smoke Hole Settlement**; neighborhood at the base of the South Fork of the Potomac at the east base of North Fork Mountains, in Pendleton and Grant counties.

**Smokehouse**; branch, a small right-hand branch of South Fork of Big Clear Creek, a tributary to Meadow River, in Greenbrier County.

**Smokehouse**; fork, a small right-hand branch of Big Heart Creek, a tributary to Guyandot River, in Logan County.

**Smoot**; post village in Greenbrier County on the Baltimore and Ohio Railroad.

**Snake**; fork, a small right-hand tributary to Elk River in Clay County.

**Snake**; run, a small right-hand tributary to Muddy Creek, a branch of Greenbrier River, in Greenbrier County.

**Snake Root**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Snap**; branch, a small left-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.

**Snow**; mount in Pendleton County. Altitude, 4,500 feet.

**Snowden**; post village in Lincoln County.

**Snowhill**; post village in Nicholas County on the Ohio Central Lines.

**Snowy**; creek, a left-hand tributary to Youghiogheny River in Preston County.

**Snyder Knob**; summit in Randolph County.

**Snyders Mills**; village in Jefferson County.



- Soab**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Soak**; creek, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Soak**; post village in Raleigh County.
- South**; fork, a small head tributary to Left Fork of Buckhannon River in Randolph County.
- South**; fork, a right-hand head tributary to Snowy Creek, a branch of Youghiogheny River, in Preston County.
- South Branch**; mountain, a narrow ridge in Hardy and Hampshire counties. Altitude, 1,500 to 3,000 feet.
- Southbranch Depot**; post village in Hampshire County.
- South Elkins**; town in Randolph County. Population, 206.
- South Fork**; mountain, broken range in the eastern part of the State. Altitude, 1,500 to 3,000 feet.
- South Mill**; creek, a right-hand tributary to South Branch of Potomac River in Grant and Pendleton counties.
- South Millcreek**; post village in Pendleton County.
- South Morgantown**; town in Monongalia County. Population, 405.
- Southside**; post village in Mason County.
- Souttell**; run, a left-hand branch of Short Creek in Ohio County.
- Sow**; branch, a very small right-hand tributary to Laurel Branch, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Spangler**; branch, a very small left-hand tributary to Winding Gulf, a branch of Guyandot River, in Raleigh County.
- Spangler**; fork, a small left-hand branch of Middle Fork of Blue Creek, a tributary to Elk River, in Kanawha County.
- Spangler**; post village in Kanawha County.
- Spanishburg**; post village in Mercer County, located on Bluestone River. Altitude, 2,074 feet.
- Spanker**; branch, a very small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Sparrow**; creek, a small left-hand tributary to Spruce Fork of Little Coal River, a branch of Coal River, in Boone County.
- Sparrow**; run, a small left-hand tributary to Holly River in Braxton County.
- Spaulding**; post village in Mingo County.
- Speed**; branch, a very small left-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.
- Speed**; post village in Roane County.
- Spencer**; branch, a small right-hand tributary to Boyer Fork of Piney Creek, a branch of New River, in Raleigh County.
- Spencer**; county seat of Roane County on the Baltimore and Ohio Railroad. Population, 737.
- Spice**; creek, a very small right-hand tributary to Guyandot River in Mingo County.
- Spice**; creek, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Spice**; creek, a small left-hand tributary to South Fork of Tug River in McDowell County.
- Spice**; run, a small left-hand tributary to Greenbrier River on boundary line between Pocahontas and Greenbrier counties.
- Spice**; run, a small right-hand tributary to Williams River in Webster County.
- Spice**; run, a very small right-hand tributary to Gauley River in Nicholas County.
- Spice Laurel**; branch, a small left-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

- Spicelick**; fork, a head fork of Joe Creek, a tributary to Coal River, in Boone County.
- Spider**; creek, a right-hand branch of Pinnacle Creek, a tributary to Guyandot River, in Wyoming County.
- Spider Ridge**; mountains in Wyoming County.
- Spilman**; post village in Mason County on the Baltimore and Ohio Railroad.
- Spottswood**; post village in Logan County.
- Spread Bend**; mountain, a short ridge north of Elk River in Clay County. Altitude, 1,000 feet.
- Spring**; branch, a very small right-hand tributary to Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Spring**; branch, a small right-hand branch of Rock Camp Fork of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Spring**; creek, a small right-hand tributary to Greenbrier River in Greenbrier County.
- Spring**; creek, a right-hand branch of Grass Run in Gilmer County.
- Spring**; creek, a small left-hand tributary to Ohio River, rising in Roane County.
- Spring**; fork, a left-hand branch of Ben Creek, a tributary to Tug Fork of Big Sandy River, in Mingo County.
- Spring**; fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Spring Creek**; post village in Greenbrier County on the Chesapeake and Ohio Railway.
- Springdale**; post village in Fayette County.
- Springfield**; town in Hampshire County on the Baltimore and Ohio Railroad. Population, 143.
- Springgap**; post village in Hampshire County.
- Springgarden**; post village in Roane County.
- Springhill**; post village in Kanawha County on the Chesapeake and Ohio, the Kanawha and Coal River, and the Ohio Central Lines railroads. Altitude, 597 feet.
- Sprive**; run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.
- Spruce**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Spruce**; fork, a stream in Logan and Boone counties, uniting with Pond Fork to form Little Coal River.
- Spruce**; fork, a small left-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Webster County.
- Spruce**; fork, a small left-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.
- Spruce**; fork, a left-hand head fork of Little Coal River, a branch of Coal River, in Boone and Logan counties.
- Spruce**; fork, a small right-hand tributary to Right Fork of Stone Coal Creek in Upshur County.
- Spruce**; fork, a small right-hand branch of Brier Creek, a tributary to Coal River, in Kanawha County.
- Spruce**; fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.
- Spruce**; fork, a small right-hand tributary to Birch River, a branch of Elk River, in Webster County.
- Spruce**; fork, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Spruce**; fork, a right-hand tributary to Wolf Creek in Braxton County.
- Spruce**; run, a small right-hand tributary to Cedar Creek in Gilmer County.

- Spruce**; run, a right-hand tributary to Cheat River in Preston County.
- Spruce**; run, a small right-hand branch of Brushy Fork of Muddlety Creek, a tributary to Gauley River, in Nicholas County.
- Spruce**; run, a small right-hand branch of Dry Creek, a tributary to Howards Creek, in Greenbrier County.
- Spruce**; mountain, a short ridge lying west of the North Fork of the Potomac, parallel to the Timber Ridge, in Pendleton County.
- Spruce Knob**; summit in Pocahontas County. Altitude, 4,730 feet.
- Spruce Knob**; summit of Spruce Mountain in Pendleton County. Altitude, 4,860 feet.
- Spruce Low**; gap caused by Spruce Fork of Blue Creek.
- Spruce Pine Hollow**; small right-hand tributary to Kanawha River in Kanawha County.
- Spurlock**; branch, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Spurlockville**; post village in Lincoln County.
- Squealer Knob**; summit in Raleigh County.
- Squirejim**; post village in McDowell County.
- Stafford**; branch, a very small right-hand tributary to Guayandot River in Mingo County.
- Stafford**; post village in Mingo County.
- Stags**; run, a small left-hand branch of Patterson Creek, a tributary to North Branch of Potomac River, in Mineral County.
- Stalnaker**; post village in Lewis County.
- Stamping**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Stanaford**; branch, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Stanley**; fork, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Boone County.
- Stanley**; post village in Ritchie County.
- Starkey**; run, a left-hand tributary of Buffalo Creek in Marion County.
- State**; fork, a right-hand branch of Pyles Fork of Buffalo Creek in Marion County.
- Staten**; post village in Calhoun County.
- Staten**; run, a very small right-hand tributary to Kanawha River in Kanawha County.
- State Road**; run, a left-hand branch of Paw Paw Creek in Marion County.
- Statler Run**; post village in Monongalia County.
- Statts Mills**; post village in Jackson County.
- Steel**; post village in Wood County.
- Steel**; run, a right-hand branch of Little Fishing Run in Wetzel County.
- Steel Trap**; branch, a very small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Steener**; fork, a left-hand tributary of Lynn Camp Run in Wetzel County.
- Steep**; run, a small right-hand tributary to Wolf Creek in Braxton County.
- Steep Gut**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Steer**; creek, a small left-hand tributary to Ohio River in Calhoun County.
- Steer**; run, a right-hand branch of Left Fork of Steer Creek in Gilmer County.
- Stevens**; branch, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Stevens**; post village in Mason County on the Baltimore and Ohio Railroad.
- Stewart**; creek, a small left-hand tributary to Little Bluestone Creek in Summers County.

- Stewart**; creek, a right-hand branch of Little Kanawha River in Gilmer County.
- Stewart**; run, a small right-hand tributary to Valley River in Randolph County.
- Stewartstown**; post village in Monongalia County.
- Still**; run, a small right-hand tributary to Guyandot River in Wyoming County.
- Stillhouse**; branch, a small right-hand tributary to Twentymile Creek, a branch of Gauley River, in Nicholas County.
- Stillhouse**; branch, a very small right-hand tributary to Peters Creek, a branch of Gauley River, in Nicholas County.
- Still House**; branch, a small left-hand tributary to Leatherwood Fork of Elk River in Webster County.
- Stillhouse**; run, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Stillman**; post village in Upshur County.
- Stillwell**; post village in Wood County.
- Stinking Lick**; creek, a very small right-hand tributary to New River in Summers and Monroe counties.
- Stinson**; branch, a small left-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Stinson**; post village in Calhoun County.
- Stitt**; branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.
- Stockerts**; post village in Upshur County.
- Stockton**; post village in Mason County.
- Stockton**; station in Fayette County on the Kanawha and Michigan Railway and on Kanawha River. Altitude, 618 feet.
- Stockton Knob**; summit in Fayette County. Altitude, 3,252 feet.
- Stolling**; fork, a small left-hand tributary to Laurel Creek, a branch of Coal River, in Boone County.
- Stone**; fork, a very small left-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Stone**; run, a small right-hand tributary to Valley River in Barbour County.
- Stonecliff**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 1,076 feet.
- Stone Coal**; branch, a very small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Stonecoal**; branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Stone Coal**; branch, a small right-hand tributary to Spice Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Stone Coal**; creek, a right-hand branch of Tommy Creek, a head fork of Guyandot River, in Raleigh County.
- Stonecoal**; post village in Wayne County.
- Stone Coal**; run, a small right-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.
- Stonewall**; post village in Raleigh County on the Chesapeake and Ohio Railway.
- Stony**; creek, a small left-hand tributary to Elk River in Braxton County.
- Stony**; creek, a small left-hand tributary to Greenbrier River in Summers County.
- Stony**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.
- Stony**; post village in Hampshire County.
- Stony**; river, a large right-hand tributary to North Branch of Potomac River in Grant County.
- Stony**; run, a small left-hand tributary to Elk Water in Randolph County.
- Stony**; run, a small left-hand branch of Suttleton Creek, a tributary to Greenbrier River, in Pocahontas County.

- Stony**; run, a small right-hand tributary to South Fork of Potomac River in Pendleton County.
- Stony Creek**; mountain, a short ridge north of Greenbrier River, in Pocahontas County. Altitude, 2,500 to 3,500 feet.
- Stony Ridge**; mountains in Mercer County.
- Stotlers Crossroads**; post village in Morgan County.
- Stout**; creek; a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Stouts Mills**; post village in Gilmer County situated on Little Kanawha River.
- Stover**; branch, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Stover**; fork, a small left-hand tributary to Clear Fork of Coal River in Raleigh County.
- Stover**; fork, a small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Stover**; fork, a very small right-hand tributary to Sycamore Creek, a branch of Clear Fork of Coal River, in Raleigh County.
- Stover**; post village in Tucker County on the Dry Fork Railroad.
- Straight**; creek, a small left-hand tributary to Gauley River in Webster County.
- Straight**; fork, a head fork of Little Skin Creek in Lewis County.
- Straight**; fork; a small left-hand tributary to West Fork of Monongahela River in Lewis County.
- Straight**; fork, a very small left-hand tributary to Huff Creek, a branch of Guyandot River, in Wyoming County.
- Straight**; fork, a left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Straight Creek**; mountain, a short ridge north of Williams River in Webster County.
- Strange**; creek, a small left-hand tributary to Elk River in Nicholas and Braxton countries.
- Strangecreek**; post village in Braxton County.
- Streeter**; post village in Summers County.
- Stroud**; creek, a small right-hand tributary to Gauley River, in Nicholas and Webster counties.
- Stroud Knobs**; summit in Nicholas County.
- Strouds**; post village in Webster County.
- Stump**; run, a small right-hand tributary to South Fork of Potomac River in Hardy County.
- Stumptown**; post village in Gilmer County.
- Stumpy**; creek, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Sturms Mill**; village in Marion County.
- Styles**; run, a left-hand branch of Long Drain in Wetzel County.
- Suck**; creek, a small right-hand branch of Little Bluestone Creek, a tributary to Bluestone River, in Summers County.
- Sue**; post village in Greenbrier County.
- Sugar**; branch, a very small left-hand tributary to Hominy Creek, a branch of Gauley River, in Nicholas County.
- Sugar**; creek, a right fork of Laurel Creek, a tributary to Valley River, in Barbour County.
- Sugar**; creek, a right-hand branch of Back Fork of Elk River in Webster and Randolph counties.
- Sugar**; creek, a very small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan and Wyoming counties.

**Sugar;** creek, a small left-hand branch of Twomile Creek, a tributary to Kanawha River, in Kanawha County.

**Sugar;** creek, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.

**Sugar;** creek, a small left-hand tributary to Williams River in Pocahontas County.

**Sugar;** run, a left-hand branch of Fish Creek in Wetzel County.

**Sugar;** run, a very small right-hand tributary to Guyandot River in Wyoming County.

**Sugar;** run, a left-hand branch of Paw Paw Creek in Marion County.

**Sugar;** run, a small right-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Sugar;** ran, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.

**Sugar Camp;** branch, a very small left-hand tributary to Mulberry Fork of Loop Creek, a branch of Kanawha River, in Fayette County.

**Sugar Camp;** branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.

**Sugar Camp;** branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Sugar Camp;** branch, a very small right-hand branch of Hughes Creek, a tributary to Kanawha River, in Kanawha County.

**Sugar Camp;** branch, a very small right-hand branch of Kelly Creek, a tributary to Kanawha River, in Kanawha County.

**Sugarcamp;** branch, a very small right-hand tributary to Davis Creek, a branch of Kanawha River, in Kanawha County.

**Sugar Camp;** branch, a very small right-hand tributary to Guyandot River in Wyoming County.

**Sugarcamp;** creek, a very small right-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.

**Sugarcamp;** post village in Doddridge County.

**Sugar Camp;** run, a small right-hand tributary to Elk River in Braxton County.

**Sugar Camp;** run, a left-hand tributary of Booths Creek in Harrison County.

**Sugar Camp;** run, a small left-hand tributary to Knapp Creek, a branch of Greenbrier River, in Pocahontas County.

**Sugar Camp Knob;** summit in Greenbrier County.

**Sugarcamp Knob;** summit in Lincoln County.

**Sugar Creek;** mountain, a short ridge between Williams River and Williams River Mountain in Pocahontas County.

**Sugargrove;** post village in Pendleton County.

**Sugar Grove Knob;** summit in Nicholas County. Altitude, 3,028 feet.

**Sugar Knob;** summit in Braxton County. Altitude, 1,630 feet.

**Sugar Knob;** summit in Greenbrier County.

**Sugar Run;** branch, a small left-hand tributary to Rich Creek, a branch of New River, in Monroe County.

**Sugartree;** branch, a very small right-hand tributary to Mud River, a branch of Guyandot River, in Boone County.

**Sugar Tree;** branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Sugar Tree;** branch, a small left-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Sugartree;** fork, a left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.

**Sugar Tree Bench;** mountains, a short spur of Yew Mountains in Greenbrier and Pocahontas counties.

**Sugar Valley**; post village in Pleasants County.

**Suke**; creek, a small left-hand branch of Little Huff Creek, a tributary to Guyandot River, in Wyoming County.

**Sulphur**; post village in Mineral County.

**Sulphur**; run, a small right-hand branch of Hughes Fork, in Braxton County.

**Sulphur Spring**; fork, a small right-hand branch of Fourteenmile Creek, a tributary to Guyandot River, in Lincoln County.

**Sulphur Spring**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.

**Sulphur Spring**; fork, a small left-hand branch of Peters Cave Fork of Horse Creek, a tributary to Little Coal River, in Lincoln County.

**Summers**; county, situated in the southern part of the State on the summit of the Allegheny Plateau, which here presents the broken, mountainous surface with numerous high points, the highest 3,945 feet, Keeney Knob. Area, 368 square miles. Population, 16,265—white, 15,149; negro, 1,115; foreign born, 64. County seat, Hinton. The mean magnetic declination in 1900 was  $1^{\circ} 30'$ . The mean annual rainfall is 50 to 60 inches, and the mean annual temperature  $50^{\circ}$  to  $55^{\circ}$ .

The county is traversed by the Chesapeake and Ohio Railway.

**Summers**; post village in Doddridge County.

**Summersville**; county seat of Nicholas County. Population, 223.

**Summersville**; mountain in Nicholas County. Altitude, 2,584 feet.

**Summit Point**; post village in Jefferson County on the Baltimore and Ohio Railroad. Altitude, 623 feet.

**Sunhill**; post village in Wyoming County.

**Sunlight**; post village in Greenbrier County.

**Sunnyside**; post village in Fayette County on the Chesapeake and Ohio Railway and on New River. Altitude, 842 feet.

**Sunrise**; branch, a small right-hand branch of Trace Creek, a tributary to Middle Fork of Mud River, in Lincoln County.

**Sunset**; branch, a small left-hand tributary to Trace Creek, a branch of Middle Fork of Mud River, in Lincoln County.

**Sunset**; post village in Pocahontas County.

**Surveyor**; fork, a left-hand head fork of Marsh Fork of Coal River, in Raleigh County.

**Sutherland**; post village in Kanawha County.

**Sutphin**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

**Suttleton**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Sutton**; county seat of Braxton County on the Baltimore and Ohio Railroad. Population, 864. Altitude, 823 feet.

**Sutton**; run, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.

**Sutton**; run, a small right-hand tributary to Birch River in Nicholas County.

**Swago**; creek, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Swago**; mountain, a short ridge in central part of Pocahontas County. Altitude, 3,500 to 4,000 feet.

**Swamp**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.

**Swamp**; run, a small right-hand tributary to Valley River in Barbour County.

**Swamprun**; post village in Upshur County.

**Swann**; post village in Cabell County.



- Sweedlin Hill**; short ridge lying east of South Fork of the Potomac in Pendleton County.
- Sweep**; run, a left-hand branch of Booths Creek in Harrison and Morgan counties.
- Sweetland**; post village in Lincoln County.
- Sweetsprings**; post village in Monroe County.
- Sweet Water**; branch, a very small right-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Swell Knob**; summit in Fayette County.
- Swift**; run, a small right-hand tributary to Greenbrier River, in Summers County.
- Swoopes Knobs**; group of summits in Monroe County.
- Sycamore**; branch, a small right-hand tributary to Big Huff Creek, a branch of Guyandot River, in Wyoming County.
- Sycamore**; branch, a small right-hand tributary to Big Cub Creek, a branch of Guyandot River, in Wyoming County.
- Sycamore**; branch, a very small right-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Sycamore**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha and Fayette counties.
- Sycamore**; creek, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Sycamore**; creek, a small right-hand branch of Little Kanawha River in Gilmer County.
- Sycamore**; creek, a small left-hand branch of Clear Fork of Coal River in Raleigh County.
- Sycamore**; creek, a right-hand branch of Trace Fork in Putnam County.
- Sycamore**; fork, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Sycamore**; fork, a small right-hand tributary to Left Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Sycamore**; fork, a left-hand tributary to Middle Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Sycamore**; post village in Calhoun County.
- Sycamore Dale**; village in Harrison County.
- Sylvia**; branch, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Tabler**; post village in Berkeley County on the Cumberland Valley Railroad.
- Tablerock**; post village in Raleigh County.
- Table Rock**; summit in Kanawha County. Altitude, 1,756 feet.
- Tackett**; creek, a small left-hand branch of Coal River, a tributary to Kanawha River, in Kanawha County.
- Tackey**; fork, a small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.
- Tacy**; post village in Barbour County.
- Tague**; fork, a small right-hand tributary to Right Fork of Steer Creek in Braxton County.
- Takein**; creek, a very small right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Talcott**; post village in Summers County on the Chesapeake and Ohio Railway. Altitude, 1,512 feet.
- Tallmansville**; post village in Upshur County.
- Tallow Knob**; summit in Pocahontas County.
- Tallyho**; post village in Wood County.
- Tank**; branch, a very small right-hand tributary to Piney Creek, a branch of New River, in Raleigh County.

- Tanner;** fork, a right-hand branch of Little Kanawha River in Gilmer County.
- Tanner;** fork, a small left-hand tributary to Right Fork of Steer Creek in Gilmer County.
- Tanner;** post village in Gilmer County.
- Tantrough;** branch, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Tantrough;** run, a right-hand branch of Fish Creek in Wetzel County.
- Tappan;** post village in Taylor County.
- Tarcoat;** creek, a left-hand tributary to North River in Hampshire County.
- Tariff;** post village in Roane County.
- Tate;** creek, a small right-hand branch of Elk River in Braxton County.
- Tate;** post village in Braxton County.
- Tate;** run, a small right-hand branch of Peters Creek, a tributary to Gauley River, in Nicholas County.
- Tater Knob;** run, a small right-hand tributary to Back Fork of Holly River in Webster County.
- Taylor;** branch, a small left-hand tributary to Gauley River in Nicholas County.
- Taylor;** county, situated on the Allegheny Plateau. Drained by tributaries to the Monongahela River. Area, 132 square miles. Population, 14,978—white, 14,553; negro, 423; foreign born, 384. County seat, Grafton. The mean magnetic declination in 1900 was  $4^{\circ} 5'$ . The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 45 to  $50^{\circ}$ . The county is traversed by the Baltimore and Ohio Railroad.
- Taylor;** fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas and Clay counties.
- Taylor;** fork, a left-hand branch of Jenkins Fork of Loop Creek, a tributary to Kanawha River, in Fayette County.
- Taylor;** run, a very small right-hand tributary to Elk River in Braxton County.
- Tea;** branch, a small right-hand tributary to South Fork of Tug River in McDowell County.
- Tea;** creek, a small right-hand tributary to Williams River in Pocahontas County.
- Tea Creek;** mountain, a short ridge at foot of Gauley Mountain in Pocahontas County. Altitude, 3,500 to 4,000 feet.
- Tearcoat Hill;** town between North Fork of Lunice Creek and Brushy Run in Grant County.
- Teays;** post village in Putnam County.
- Teddy;** post village in Clay County.
- Teeny Knob;** summit in Braxton County.
- Ten Mile;** creek, a small right-hand tributary to Buckhannon River in Upshur County.
- Tenmile;** creek, a small left-hand branch of Guyandot River, a tributary to Ohio River, in Lincoln County.
- Tenmile;** fork, a small left-hand branch of Campbell Creek, a tributary to Kanawha River, in Kanawha County.
- Tenmile;** fork, a left-hand branch of Cabin Creek, a tributary to Kanawha River, in Kanawha County.
- Tenmile;** fork, a left-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.
- Tenmile;** post village in Upshur County on the Baltimore and Ohio Railroad. Altitude, 1,608 feet.
- Terra Alta;** town in Preston County on the Baltimore and Ohio Railroad. Population, 616.
- Tesla;** post village in Braxton County.
- Teter;** creek, a right-hand tributary to Valley River in Barbour County.

**Texas**; post village in Tucker County on the Baltimore and Ohio Railroad. Altitude, 883 feet.

**Texel**; post village in Randolph County.

**Thacker**; creek, a small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Thacker**; post village in Mingo County on the Norfolk and Western Railway.

**Thayer**; post village in Fayette County.

**The**; creek, a small left-hand tributary to Back Fork of Elk River in Randolph County.

**The Big Bend**; a portion of Greenbrier River, forming a big bend, in Summers County.

**The Loop**; a bend in Meadow River, a branch of Gauley River.

**The Pond**; summit in Raleigh County.

**The Roughts**; hills in Mingo County.

**The Sinks**; valley at the head of Gandy Creek in Randolph County.

**Third**; run, a small right-hand branch of Little Kanawha River in Gilmer County.

**Thoburn**; village in Marion County.

**Thomas**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Thomas**; mountain, a short ridge between Laurel and Moore runs. branches of Greenbrier River, in Pocahontas County.

**Thomas**; town in Tucker County, on the West Virginia Central and Pittsburg Railway. Population, 2,126.

**Thompson**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Thompson**; run, a small right-hand tributary to Valley River in Randolph County.

**Thorn**; post village in Pendleton County.

**Thorn**; run, a small left-hand tributary to Patterson Creek, a branch of North Branch of Potomac River, in Grant County.

**Thorn**; run, a right-hand tributary to South Branch of Potomac River in Pendleton County.

**Thornton**; post village in Taylor County on the Baltimore and Ohio Railroad. Altitude, 1,038 feet.

**Thorny**; creek, a small left-hand tributary to Greenbrier River in Pocahontas County.

**Thorny Bottom**; right-hand tributary to Cacapon River in Hardy County.

**Thorny Creek**; mountain, a short ridge between Thorny Creek and Greenbrier River in Pocahontas County. Altitude, 3,000 feet.

**Thorny Flat**; summit of Back Alleghany Mountains in Pocahontas County.

**Thoroughfare**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha County.

**Three Churches**; post village in Hampshire County.

**Three Fork**; creek, a right-hand tributary to Valley River in Taylor County.

**Three Forks**; run, a small left-hand tributary to Left Fork of Middle Fork of Tygarts Valley River in Randolph County.

**Three Forks**; very small left-hand tributary to Buffalo Creek, a branch of Guyandot River, in Logan County.

**Three Lick**; small right-hand branch of Oil Creek in Lewis County.

**Three Lick**; small right-hand branch of Little Skin Creek in Lewis County.

**Three Lick**; run, a right-hand branch of Oil Creek in Gilmer County.

**Threemile**; creek, a left-hand branch of Ohio River in Cabell County.

**Threemile**; fork, a small right-hand tributary to Whiteoak Creek, a branch of Coal River, in Boone County.

**Threemile**; fork, a very small left-hand branch of Smithers Creek, a tributary to Kanawha River, in Fayette County.

- Three Springs**; branch, a small left-hand tributary to Big Huff Creek, a branch of Guyandot River, in Logan County.
- Third Heel**; mountain in Berkeley County. Elevation, 1,777 feet.
- Thurmond**; post village in Fayette County on New River and on the Chesapeake and Ohio Railway. Altitude, 1,056 feet.
- Tichenal**; post village in Harrison county.
- Tigarts Valley**; river, a right-hand branch of the Monongahela, joining it at Fairmont.
- Tilhance**; creek, a right-hand tributary of Potomac River in Berkeley County.
- Timber Ridge**; mountains lying parallel with Spruce Mountains, west of the North Fork of the Potomac, in Pendleton County. Altitude, 2,000 to 4,000 feet.
- Timothy**; run, a small right-hand branch of Clover Lick Fork in Lewis County.
- Tincture**; fork, a left-hand tributary of Middle Fork of Mud River in Lincoln County.
- Tiney**; creek, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Tipton**; post village in Nicholas county.
- Tobacco**; run, a small left-hand tributary to Little Kanawha River in Lewis County.
- Todd**; run, a right-hand branch of Middle Wheeling Run in Ohio County.
- Tollgate**; post village in Ritchie County on the Baltimore and Ohio Railroad.
- Tom**; branch, a small right-hand tributary to Paint Creek, a branch of Kanawha River, in Kanawha and Fayette counties.
- Tom**; branch, a very small right-hand tributary to Coal River in Raleigh County.
- Tom**; branch, a very small right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Tom**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Tom**; creek, a very small left-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Tom**; creek, a small right-hand tributary to Meadow River, a branch of Gauley River, in Greenbrier County.
- Tom**; fork, a small left-hand tributary to Coal River, a branch of Kanawha River, in Lincoln County.
- Tom**; run, a small left-hand branch of Cedar Creek in Braxton County.
- Tom**; run, a very small left-hand tributary to New River in Summers County.
- Tom**; run, a small right-hand tributary to Sand Fork in Lewis County.
- Tomahawk**; village in Berkeley County.
- Tomahawk**; run, a left-hand branch of Indian Fork in Lewis County.
- Tom Bailey**; branch, a small right-hand tributary to Glen Fork, a branch of Laurel Branch of Clear Fork of Guyandot River, in Wyoming County.
- Tommy**; creek, a left-hand head fork of Guyandot River in Raleigh County.
- Tommy Ridge**; mountains in Raleigh County.
- Toney**; creek, a very small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Toney**; fork, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Toney**; fork, a right-hand branch of Clear Fork of Guyandot River in Wyoming County.
- Toney**; fork, a small right-hand branch of Buffalo Creek, a tributary to Guyandot River, in Logan County.
- Toney**; fork, a small right-hand branch of Big Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Tony**; branch, a small left-hand tributary to Right Fork of Lower Creek, a branch of Mud River, in Cabell County.

- Tony**; branch, a very small left-hand tributary to Big Ugly Creek, a branch of Guyandot River, in Lincoln County.
- Tooley**; post village in Wayne County.
- Tophet**; post village in Summers County.
- Topins Grove**; post village in Jackson County.
- Top of Alleghany**; post village in Pocahontas County.
- Tornado**; post village in Kanawha County. Altitude, 608 feet.
- Town**; branch, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Logan County.
- Town**; creek, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Town**; mountain, a summit in Pendleton County near Franklin.
- Town Creek Knob**; summit of Paint Mountain on boundary line between Raleigh and Fayette counties. Altitude, 3,088 feet.
- Trace**; branch, a very small left-hand tributary to Horse Creek, a branch of Little Coal River, in Lincoln County.
- Trace**; branch, a left-hand head fork of Elk Creek, a tributary to Guyandot River, in Logan County.
- Trace**; branch, a small right-hand tributary of Slab Fork, a branch of Guyandot River, in Wyoming County.
- Trace**; branch, a very small right-hand tributary to South Fork of Elkhorn Creek in McDowell County.
- Trace**; creek, a small left-hand tributary to Mud River, a branch of Guyandot River, in Cabell County.
- Trace**; creek, a small left-hand tributary to Middle Fork of Mud River in Lincoln County.
- Trace**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Trace**; fork, a head fork of Strange Creek in Nicholas County.
- Trace**; fork, a small left-hand branch of Big Hart Creek, a tributary to Guyandot River, in Logan County.
- Trace**; fork, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Trace**; fork, a small left-hand branch of Hurricane Creek, a tributary to Kanawha River, in Putnam County.
- Trace**; fork, a small left-hand branch of Fourmile Creek, a tributary to Guyandot River, in Lincoln County.
- Trace**; fork, a small left-hand branch of Huff Creek, a tributary to Guyandot River, in Wyoming County.
- Trace**; fork, an indirect left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Trace**; fork, a left-hand branch of Davis Creek, a tributary to Kanawha River, in Kanawha County.
- Trace**; fork, a right-hand branch of Pigeon Creek, a tributary to Tug Fork of Big Sandy River, in Logan County.
- Trace**; fork, a right-hand branch of Tanner Fork, and tributary to Little Kanawha River, in Gilmer County.
- Trace**; fork, a small right-hand branch of Joe Creek, a tributary to Coal River, in Boone County.
- Trace**; fork, a large right-hand branch of Mud River in Lincoln and Putnam counties.
- Trace**; run, a small left-hand tributary to Little Kanawha River in Lewis and Upshur counties.
- Trace**; run, a small left-hand branch of Cedar Creek in Braxton County.

- Trace Fork**; branch, a small left-hand branch of Sandlick Fork of Laurel Creek, a tributary to Coal River, in Boone County.
- Tract Hill**; short ridge in the central part of Pendleton County. Altitude, 2,000 to 2,500 feet.
- Trail**; fork, a right-hand branch of Long Drain River in Wetzel County.
- Travellers Repose**; post village in Pocahontas County.
- Tressel**; post village in Pendleton County.
- Triadelphia**; town in Ohio County on the Baltimore and Ohio Railroad. Altitude, 735 feet. Population, 287.
- Tribble**; post village in Mason County.
- Trilby**; post village in Ritchie County.
- Triplets**; run, a right-hand branch of Little Kanawha River in Braxton County.
- Triplett**; fork, a right-hand branch of O'Brien Fork in Braxton County.
- Triplett**; post village in Roane County.
- Tristan**; post village in Roane County.
- Triune**; post village in Monongalia County.
- Trough**; creek, a right-hand branch of Kiah Fork of Twelvepole Creek in Wayne County.
- Trough**; fork, a small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Trough**; fork, a small left-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Trout**; post village in Greenbrier County.
- Trout**; run, a small left-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.
- Trout**; run, a small right-hand tributary to South Branch of Potomac River in Pendleton and Hampshire counties.
- Trout**; run, a right-hand tributary to Cacapon River in Hardy County.
- Trout**; run, a small right-hand tributary to Left Fork of Right Fork of Buckhannon River in Randolph County.
- Troy**; town in Gilmer County. Population, 148.
- Trubie**; run, a small right-hand tributary to Buckhannon River in Upshur County.
- True**; post village in Summers County.
- Truebada**; post village in Gilmer County, situated on Little Kanawha River.
- Tuckahoe**; post village in Greenbrier County on the Chesapeake and Ohio Railway and on Dry Creek. Altitude, 2,035 feet.
- Tucker**; county, situated in the northern part of the State on the Allegheny Plateau. The average elevation is not far from 3,000 feet. Area, 440 square miles. Population, 13,433—white, 13,077; negro, 353; foreign born, 1,508. County seat, Parsons. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the West Virginia Central and Pittsburg Railway.
- Tucker**; post village in Wirt County.
- Tucker**; run, a right-hand branch of Lost Creek in Taylor County.
- Tuckers**; run, a small right-hand tributary to South Branch of Potomac River in Hardy County.
- Tudell**; post village in Wayne County.
- Tug**; fork, a small left-hand tributary to Birch River, a branch of Elk River, in Nicholas County.
- Tug Fork of Big Sandy**; fork, large branch of Big Sandy River, heading in McDowell County; it flows northwest, forming a portion of the western boundary of the State and joining Levisa Fork at Louisa.
- Tugg**; creek, a very small right-hand tributary to New River in Summers County.

- Tug River**; post village in McDowell County, located on Tug Fork of Big Sandy River.
- Tunnelton**; town in Preston County on the Baltimore and Ohio and the West Virginia Northern railroads. Altitude, 1,820 feet. Population, 479.
- Turkey**; branch, a very small left-hand branch of Right Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Turkey**; branch, a very small left-hand tributary to Piney Creek, a branch of New River, in Raleigh County.
- Turkey**; creek, a very small right-hand tributary to Guyandot River in Wyoming County.
- Turkey**; creek, a very small right-hand branch of Tug Fork of Big Sandy River in Mingo County.
- Turkey**; creek, a very small right-hand tributary to New River in Fayette County.
- Turkey**; creek, a small left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Putnam and Lincoln counties.
- Turkey**; creek, a small left-hand branch of Indian Creek, a tributary to New River, in Monroe County.
- Turkey**; creek, a small left-hand tributary to Gauley River in Webster County.
- Turkey**; fork, a left-hand tributary to Buffalo Creek, a branch of Elk River, in Nicholas County.
- Turkey**; mountain, a short ridge north of Williams River in Webster County. Altitude, 3,500 to 3,887 feet, the latter being the height of one of its peaks.
- Turkey**; post village in Mingo County.
- Turkey**; run, a small right-hand tributary to Right Fork of Middle Fork of Little Kanawha River in Upshur County.
- Turkey**; run, a right-hand branch of Plummer Run in Taylor County.
- Turkey Bone**; mountain, a short ridge in the western part of Randolph County. Altitude, 3,000 to 3,500 feet.
- Turkey Camp Knob**; summit in Wayne County.
- Turkey Gap**; branch, a very small right-hand tributary to South Fork of Elkhorn Creek in McDowell County.
- Turkey Knob**; branch, a very small right-hand tributary to Dunlop Creek, a branch of New River, in Fayette County.
- Turkeylick**; run, a right-hand branch of Tanner Creek in Gilmer County.
- Turkey Ridge**; mountains in Wyoming County.
- Turkey Ridge**; short spur between Taylor Ridge and Turkey Creek in Nicholas County.
- Turkey Wallow**; branch, a very small left-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Turley**; branch, a small right-hand tributary to Dunlop Creek, a branch of New River, in Fayette County.
- Turnhole**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Turnrow**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Turtle**; creek, a left-hand tributary to Little Coal River, a branch of Coal River, in Boone County.
- Turtlecreek**; post village in Boone County.
- Twelve Mile**; creek, a small left-hand tributary to East River, a branch of New River, in Mercer County.
- Twelvepole**; creek, a left-hand branch of Ohio River, formed by two forks, east and west, which rise in Wayne County.
- Twelvepole**; creek, a left-hand tributary to Ohio River in Wayne County.



- Twentymile;** creek, a right-hand tributary to Gauley River, a large branch of Kanawha River, in Nicholas County.
- Twiggs;** post village in Pleasants County.
- Twilight;** village in Ohio County.
- Twin;** branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.
- Twin;** branches, small right-hand tributaries to Cranberry River, in Webster County.
- Twin Sugars;** summit in Greenbrier County.
- Twisted Gun Gap;** height in Mingo County. Altitude, 1,422 feet.
- Twistville;** post village in Braxton County.
- Two;** run, a small right-hand tributary to Crooked Fork of Steer Creek in Gilmer County.
- Two and Three Quarters Mile;** creek, a small left-hand tributary to Kanawha River in Kanawha County.
- Two Lick;** small right-hand tributary to Oil Creek in Lewis County.
- Two Lick;** run, a right-hand tributary to Little Birch River in Braxton County.
- Twomile;** branch, a small left-hand branch of Twentymile Creek, a tributary to Gauley River, in Nicholas County.
- Twomile;** branch, a very small left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Twomile;** branch, a very small right-hand tributary to Glade Creek, a branch of New River, in Raleigh County.
- Twomile;** creek, a small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Twomile;** creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Twomile;** creek, a very small left-hand branch of East Fork of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Twomile;** fork, a small left-hand branch of Whiteoak Creek, a tributary to Coal River, in Boone County.
- Tygart;** creek, a small left-hand tributary to Ohio River in Wood County.
- Tygart;** post village in Randolph County on the Baltimore and Ohio Railroad.
- Tygart's Valley;** large branch of Monongahela River, heading in Randolph County. Its course is generally north through Barbour and Taylor counties to its mouth at Fairmont in Marion County.
- Tyler;** county, situated in the northwestern part of the State, bordering on Ohio River; situated at the foot of the slope of the Allegheny Plateau. Area, 269 square miles. Population, 18,252—white, 18,153; negro, 94; foreign born, 295. County seat, Middlebourne. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River Railroad.
- Tyler;** creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Cabell County.
- Tyler;** creek, a small right-hand tributary to Kanawha River in Kanawha County.
- Tyner;** post village in Wood County.
- Tyrconnell Mines;** post village in Taylor County.
- Tyrone;** post village in Monongalia County.
- Uffington;** post village in Monongalia County on the Baltimore and Ohio Railroad.
- Ugly;** branch, a small right-hand tributary to Marsh Fork of Coal River in Raleigh County.
- Uler;** post village in Roane County.
- Ungers Store,** post village in Morgan County.
- Union;** county seat of Monroe County. Population, 256.

**Union Mills;** post village in Pleasants County.

**Unionridge;** post village in Cabell County.

**Uniontown;** post village in Wetzel County.

**Unknown;** branch, a very small right-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.

**Uno;** post village in Wyoming County.

**Unus;** post village in Greenbrier County.

**Upland;** post village in Mason County.

**Upper;** gap, height of Huff Mountain in Wyoming County.

**Upper;** creek, a very small right-hand tributary to Elk River, a large branch of Kanawha River, in Clay County.

**Upper;** mountain, a summit between two forks of Moore Run, a left-hand branch of Greenbrier River, in Pocahontas County.

**Upper;** run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.

**Upper Bee Tree;** run, a small left-hand tributary to Back Fork of Elk River in Randolph County.

**Upper Belcher;** branch, a small left-hand tributary to Elkhorn Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Upper Birch;** run, a very small left-hand tributary to Elk River in Clay County.

**Upper Cove;** headwaters of Lost River in Hardy County.

**Upperglade;** post village in Webster County.

**Upper Hensley;** creek, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell River.

**Upper Level;** run, a left-hand branch of Cedar Creek in Gilmer County.

**Upper Lick;** small left-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.

**Upper Mill;** creek, a small left-hand tributary to Elk River in Braxton County.

**Upper Pond Lick;** small left-hand tributary to Shavers Fork of Cheat River in Randolph County.

**Upper Road;** branch, a small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Upper Shannon;** branch, a small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**Upper Shant;** run, a small right-hand tributary to Back Fork of Elk River in Randolph County.

**Upper Shaver;** run, a small left-hand tributary to Left Fork of Steer Creek in Braxton County.

**Upper Sleith;** fork, a small left-hand tributary to Right Fork of Steer Creek in Braxton County.

**Upper Sturgeon;** branch, a head fork of Big Cub Creek, a tributary to Guyandot River, in Wyoming County.

**Upper Threemile;** fork, a small right-hand branch of Blue Creek, a tributary to Elk River, in Kanawha County.

**Upper Tony Camp;** run, a small right-hand tributary to Dry Fork of Cheat River in Randolph County.

**Uppertract;** post village in Pendleton County.

**Upper Two;** run, a small left-hand tributary to Left Fork of Steer Creek in Gilmer County.

**Upshur;** county situated in the central part of the State. It is drained northward by Buckhannon River. Area, 326 square miles. Population, 14,696—white, 14,473; negro, 221; foreign born, 106. County seat, Buckhannon. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 50 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.

- Upton**; branch, a very small left-hand tributary to Mud River, a branch of Guyandot River, in Lincoln County.
- Upton**; creek, a very small left-hand tributary to Kanawha River in Kanawha County.
- Upton**; village in Marion County.
- Utica**; post village in Jackson County.
- Uvilla**; post village in Jefferson County.
- Vadis**; post village in Lewis County.
- Vall**; creek, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy Creek, in McDowell County.
- Valley**; fork, a left-hand branch of Middle Fork of Mud River, a tributary to Guyandot River, in Lincoln County.
- Valley**; fork, a right-hand branch of Elk River in Randolph County.
- Valley**; mount, a summit in Pocahontas County. Altitude, 3,500 feet.
- Valley**; river, a tributary to Monongahela River.
- Valleybend**; post village in Randolph County on the West Virginia Central and Pittsburg Railway.
- Valleydale**; post village in Greenbrier County.
- Valleyfalls**; post village in Marion County, on the Baltimore and Ohio Railroad. Altitude, 969 feet.
- Valleyfork**; post village in Clay County.
- Valley Furnace**; post village in Barbour County.
- Valley Grove**; branch, a small right-hand branch of Elk Twomile Creek, a tributary to Elk River, in Kanawha County.
- Valleygrove**; post village in Ohio County on the Baltimore and Ohio Railroad.
- Valleyhead**; post village in Randolph County.
- Valley Mills**; post village in Wood County.
- Valleypoint**; post village in Preston County.
- Van**; post village in Boone County.
- Vancamp**; post village in Wetzel County.
- Van Clevesville**; post village in Berkeley County on the Baltimore and Ohio Railroad. Altitude, 500 feet.
- Vandalia**; post village in Lewis County.
- Vandegrift**; post village in Randolph County.
- Vanetta**; creek, a very small right-hand tributary to Guyandot River, a branch of Ohio River, in Lincoln County.
- Vannoys Mill**; post village in Barbour County.
- Vanvoorhis**; post village in Monongalia County on the Baltimore and Ohio Railroad.
- Varney**; post village in Mingo County.
- Vaughan**; post village in Nicholas County on the Chesapeake and Ohio Railway.
- Vegan**; post village in Upshur County.
- Venable**; branch, a very small left-hand tributary to Kanawha River in Kanawha County.
- Venison**; fork, a right-hand branch of Perkins Fork in Braxton County.
- Venus**; post village in Gilmer County.
- Veranda**; post village in Mason County.
- Victor**; post village in Fayette County.
- Victoria**; post village in Preston County.
- Vienna**; post village in Wood County on the Baltimore and Ohio Railroad.
- View**; village in Greenbrier County.
- Vilas**; post village in Ritchie County.
- Villa**; post village in Kanawha County.
- Vincen**; post village in Wetzel County.

**Viney**; mountain, a ridge in Pocahontas County.

**Vinton**; post village in Nicholas County.

**Viola**; post village in Marshall County.

**Virgie**; post village in Clay County.

**Viropa**; post village in Harrison County on the Baltimore and Ohio Railroad.

**Vista**; post village in Raleigh County.

**Vivian**; post village in McDowell County on the Norfolk and Western Railway and on Elkhorn Creek. Altitude, 1,502 feet.

**Volcano**; post village in Wood County on the Baltimore and Ohio Railroad.

**Volga**; post village in Barbour County on the Baltimore and Ohio Railroad.

**Waddles**; run, a right-hand branch of Short Creek in Ohio County.

**Wade**; fork, a left-hand branch of Little Sycamore Creek, a tributary to Elk River, in Clay County.

**Wade**; post village in Wetzel County.

**Wadestown**; post village in Monongalia County.

**Wagner Knob**; summit in Pendleton County.

**Wainville**; post village in Webster County.

**Waites**; run, a small right-hand tributary to Cacapon River in Hardy County.

**Waiteville**; post village in Monroe County.

**Waldo**; post village in Putnam County.

**Walker**; fork, a right-hand branch of Conyer Fork, a tributary to Cedar Creek, in Braxton County.

**Walker**; post village in Wood County on the Baltimore and Ohio Railroad.

**Walker Ridge**; short spur in Grant County.

**Walkers**; creek, a small left-hand branch of Ohio River in western Virginia.

**Walkersville**; post village in Lewis County.

**Wall**; branch, a very small right-hand tributary to Clear Fork, a branch of Guyandot River, in Wyoming County.

**Wallace**; branch, a very small left-hand tributary to Guyandot River, in Wyoming County.

**Wallace**; post village in Harrison County on the Baltimore and Ohio Railroad.

**Wallow Hole**; fork, a small left-hand tributary to Buffalo Creek, a branch of Elk River, in Clay County.

**Wallow Hole**; mountain, a short spur east of Greenbrier River in Greenbrier County. Altitude, 2,000 to 2,500 feet.

**Wallow Hole Knob**; summit in Clay County.

**Walnut**; creek, a very small left-hand tributary to Elk River in Kanawha County.

**Walnut**; fork, a small right-hand tributary to Elk River in Braxton County.

**Walnut**; gap, a height in Wyoming County. Altitude, 2,716 feet.

**Walnut**; post village in Calhoun County.

**Walnut**; run, a small right-hand tributary to Left Fork of Steer Creek in Braxton County.

**Walnutgrove**; post village in Roane County on the Charleston, Clendennin and Sutton Railroad.

**Walnut Knob**; summit in Clay County.

**Walton**; post village in Roane County on the Chesapeake and Ohio Railway.

**Wanless**; post village in Pocahontas County on the Cairo and Kanawha Valley Railroad.

**Wappocomo**; post village in Hampshire County.

**War**; branch, a very small right-hand tributary to Tug Fork of Big Sandy River in McDowell County.

**War**; creek, a small left-hand tributary to Dry Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.

**Warden**; post village in Raleigh County.

**Warden**; run, a right-hand tributary of Little Wheeling Creek in Ohio County.

**Wardensville**; town and post village in Hardy County. Population, 152.

**Ward Knob**; summit in Randolph County.

**Wards**; run, a small right-hand tributary to Valley River in Randolph County.

**Warfield**; post village in Clay County on the Porters Creek and Gauley Railroad.

**Warford**; post village in Summers County.

**Warm Hollow**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.

**Warren**; post village in Jackson County on the Baltimore and Ohio Railroad.

**Warrior**; fork, a left-hand branch of Buffalo Creek in Marion County.

**Washburn**; post village in Ritchie County.

**Wash Hill**; fork, a left-hand tributary to Horse Creek, a branch of Little Coal River, in Boone County.

**Washington**; post village in Wood County on the Baltimore and Ohio Railroad.

**Wasp**; post village in Pleasants County.

**Watering Pond**; small left-hand tributary to North Fork of Greenbrier River in Pocahontas County.

**Watering Pond Knob**; summit in Pocahontas County.

**Waterloo**; post village in Mason County.

**Watkins**; post village in Tyler County.

**Watson**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.

**Watson**; island in Kanawha River in Kanawha County.

**Watson (Capon Springs)**; town in Marion County. Population, 18.

**Watts**; branch, a very small left-hand tributary to West Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.

**Wattsville**; post village in Clay County.

**Waverly**; post village in Wood County on the Baltimore and Ohio Railroad.

**Way**; run, a left-hand branch of South Fork of Fishing Creek in Wetzel County.

**Wayne**; county, situated in the southwestern part of the State on the lower slopes of the Allegheny Plateau. It is drained mainly by Twelvepole Creek. Area, 545 square miles. Population, 23,619—white, 23,298; negro, 321; foreign born, 51. County seat, Wayne. The mean magnetic declination in 1900 was 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Norfolk and Western and the Chesapeake and Ohio railways.

**Wayne**; county seat of Wayne county on the Norfolk and Western Railway.

**Wayside**; post village in Monroe County.

**Weaver**; post village in Randolph County on the Belington and Beaver Creek Railroad.

**Weavers Knob**; summit in Greenbrier County. Altitude, 2,931 feet.

**Webster**; county, situated in the central part of the State, on the Allegheny Plateau, and drained by tributaries to Little Kanawha River. Area, 590 square miles. Population, 8,862—white, 8,850; negro, 12; foreign born, 74. County seat, Addison. The mean magnetic declination in 1900 was 2° 10'. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 45° to 50°. The county is traversed by the Baltimore and Ohio Railroad.

**Webster**; post village in Taylor County on the Baltimore and Ohio Railroad. Altitude, 1,022 feet.

**Webster Springs**; county seat of Webster County. Population, 297.

**Weiss Knob**; summit of Canaan Mountain in Tucker County. Altitude, 4,490 feet.

**Welch**; county seat of McDowell County at junction of Elkhorn Creek with Tug Fork of Big Sandy River and on the Norfolk and Western Railway. Altitude, 1,297 feet. Population, 442.

**Welcome**; post village in Marshall County.

**Wellford**; post village in Kanawha County.

**Wellington**; post village in Roane County.

**Wells**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Wells**; run, a right-hand branch of Buffalo Creek in Brooke County.

**Wellsburg**; county seat of Brooke County on the Pittsburg, Cincinnati, Chicago and St. Louis Railroad. Population, 2,588. Altitude, 635 feet.

**Welsh Glade**; summit in Webster County on the Pittsburg, Cincinnati, Chicago and St. Louis Railway. Altitude, 2,222 feet.

**Wesley**; post village in Wood County.

**West**; fork, a large right-hand branch of Pond Fork of Little Coal River in Boone County.

**West**; post village in Wetzel County.

**West**; run, a right-hand branch of Monongahela River in Monongalia County.

**West Columbia**; village in Mason County on the Baltimore and Ohio Railroad. Population, 205.

**West End**; post village in Preston County on the Baltimore and Ohio Railroad. Altitude, 945 feet.

**Westfall**; fork, a small right-hand branch of Cedar Creek in Braxton County.

**West Liberty**; post village in Ohio County.

**West Milford**; town in Harrison County. Population, 187.

**Weston**; county seat of Lewis County on the Baltimore and Ohio Railroad. Altitude, 824 feet.

**West Union**; county seat of Doddridge County on the Baltimore and Ohio Railroad. Population, 623. Altitude, 800 feet.

**Wet**; branch, a left-hand tributary to Cabin Creek, a branch of Kanawha River, in Kanawha County.

**Wetzel**; county, situated in the northwestern part of the State, bordering on Ohio River and lying at the foot of the slope of the Allegheny Plateau. Area, 365 square miles. Population, 22,880—white, 22,440; negro, 439; foreign born, 393. County seat, New Martinsville. The mean magnetic declination in 1900 was 2° 30'. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Ohio River and the Baltimore and Ohio railroads.

**Wharnccliffe**; post village in Mingo County on the Norfolk and Western Railway. Altitude, 822 feet.

**Wheatland**; post village in Jefferson County on the Norfolk and Western Railway.

**Wheeler**; fork, a small right-hand tributary to Skin Creek in Lewis County.

**Wheeler**; small islands in Kanawha River in Fayette County.

**Wheeling**; creek, a small left-hand branch of Ohio River, rising in Pennsylvania and flowing west into Ohio River.

**Wheeling**; county seat of Ohio County on the Baltimore and Ohio, the Pittsburg, Cincinnati, Chicago and St. Louis, and the Wheeling and Lake Erie railroads. Altitude, 645 feet.

**Whetstone**; creek, a left-hand branch of Fish Creek in Wetzel County.

**Whetstone**; post village in Clay County.

**Whetstone**; run, a small left-hand tributary to South Branch of Potomac River in Pendleton County.

**Whetstone**; run, a right-hand branch of Buffalo Creek in Marion County.

**Whisler**; run, a left-hand branch of Dunkard Creek in Monongalia County.

**Whitcomb**; post village in Greenbrier County on the Chesapeake and Ohio Railway.

**White**; post village in Preston County.

**White**; run, a right-hand tributary of Potomac River in Berkeley County.

**Whiteday**; post village in Monongalia County.

- Whiteman**; branch, a small right-hand branch of Aaron Fork of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Whiteoak**; branch, a very small right-hand tributary to East Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Whiteoak**; branch, a very small right-hand branch of Laurel Fork, a tributary to Clear Fork of Guyandot River, in Wyoming County.
- Whiteoak**; branch, a small right-hand tributary to Laurel Fork, a branch of Spruce Fork of Little Coal River, in Boone County.
- Whiteoak**; branch, a very small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Whiteoak**; branch, a small left-hand tributary to Panther Creek, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Whiteoak**; branch, a very small left-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- Whiteoak**; creek, a left-hand branch of Dunloup Creek, a tributary to New River, in Fayette County.
- Whiteoak**; creek, a very small left-hand tributary to Guyandot River, a branch of Ohio River, in Mingo County.
- Whiteoak**; creek, a small right-hand tributary to Clear Fork of Coal River in Raleigh County.
- Whiteoak**; creek, a small right-hand tributary to Coal River, a branch of Kanawha River, in Boone County.
- White Oak**; fork, a small indirect left-hand tributary to Blue Creek, a branch of Elk River, in Kanawha County.
- White Oak**; fork, a small right-hand tributary to Williams River in Webster County.
- Whiteoak**; fork, a small right-hand branch of Loop Creek, a tributary to Kanawha River, in Fayette County.
- White Oak**; mountain, a short ridge north of Williams River, in Webster County. Altitude, 3,500 feet.
- White Oak**; mountain, a broken mountainous range, forming the boundary between Raleigh and Summers counties. Altitude, 3,418 feet.
- Whiteoak**; post village in Ritchie County.
- White Oak**; run, a small right-hand tributary to Left Fork of Steer Creek in Gilmer County.
- Whitepine**; post village in Calhoun County.
- White Rock**; mountain, a short ridge east of Greenbrier River in Greenbrier County. Altitude, 2,500 to 3,212 feet, the latter the height of one peak.
- Whites**; branch, a small right-hand tributary to West Fork, a branch of Pond Fork of Little Coal River, in Boone County.
- Whites**; run, a left-hand branch of Cheat River in Monongalia County.
- Whites Creek**; post village in Wayne County.
- Whites Draft**; small left-hand tributary to Anthony Creek, a branch of Greenbrier River, in Greenbrier County.
- Whites Trace**; very small left-hand tributary to Spruce Fork of Little Coal River in Logan County.
- White Sulphur Springs**; post village in Greenbrier County on Howards Creek and on the Chesapeake and Ohio Railway. Altitude, 2,000 feet.
- Whitewater**; small left-hand branch of Peter Creek, a tributary to Gauley River, in Nicholas County.
- Whitfield**; post village in Ohio County.
- Whitman**; run, a small left-hand tributary to Valley River in Randolph County.
- Whitman Flats**; summit in Randolph County.
- Whitman Knob**; summit in Randolph County.



- Whitmans**; run, a small left-hand tributary to Anthony Creek, a branch of Greenbrier River, in Greenbrier County.
- Wick**; post village in Tyler County.
- Wickwire**; run, a right-hand branch of Tygarts Valley River in Taylor County.
- Wide Mouth**; creek, a left-hand tributary to Bluestone River in Mercer County.
- Wiggins**; post village in Summers County on the Chesapeake and Ohio Railway.
- Wikel**; post village in Monroe County.
- Wilbur**; post village in Tyler County.
- Wildcat**; post village in Lewis County.
- Wild Cat**; run, a small left-hand tributary to Skin Creek in Lewis County.
- Wild Cat Knob**; summit in Nicholas County. Altitude, 2,837 feet.
- Wilderness**; fork, a middle fork of Fork Creek, a tributary to Coal River, in Boone County.
- Wilding**; post village in Jackson County.
- Wiley**; fork, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Wiley Spring**; branch, a small left-hand tributary to Devils Fork, a branch of Guyandot River, in Raleigh County.
- Wileyville**; post village in Wetzel County.
- Wilkerson**; branch, a very small left-hand tributary to Pocotaligo River, a branch of Kanawha River, in Kanawha County.
- Willey**; fork, a right-hand branch of North Fork of Fishing Creek in Wetzel County.
- Willey**; post village in Monongalia County.
- William**; post village in Tucker County on the West Virginia Central and Pittsburg Railway.
- William Camp**; run, a small right-hand tributary to Gauley River in Webster County.
- Williams**; fork, a left-hand tributary to Trace Fork of Mud River, a branch of Guyandot River, in Lincoln County.
- Williams**; river, a large left-hand branch of Gauley River, rising in Pocahontas County, and flowing northwesterly through Webster County to its mouth.
- Williamsburg**; post village in Greenbrier County.
- Williamson**; branch, a very small right-hand branch of Tug Fork of Big Sandy River, a tributary to Ohio River, in Logan County.
- Williamson**; branch, a very small right-hand tributary to Guyandot River in Wyoming County.
- Williamson**; county seat of Mingo County on the Norfolk and Western Railway.
- Williamson**; station in Logan County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Williamsport**; post village in Grant County, situated on Patterson Creek. Altitude, 988 feet.
- Williams River**; mountain, a ridge extending from Webster County into Pocahontas. Altitude, 3,000 to 4,000 feet.
- Williamstown**; post village in Wood County.
- Willis**; branch, a very small left-hand tributary to Paint Creek, a branch of Kanawha River, in Fayette County.
- Willow**; post village in Pleasants County.
- Willowbend**; post village in Monroe County.
- Willowdale**; post village in Jackson County.
- Willowgrove**; post village in Jackson County, on the Baltimore and Ohio Railroad.
- Willowton**; post village in Mercer County.
- Willowtree**; post village in Jackson County.
- Wills**; creek, a left-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.

- Wilmore**; station in McDowell County on the Norfolk and Western Railway and on Tug Fork of Big Sandy River.
- Wilmoth**; run, a small right-hand tributary to Valley River in Randolph County.
- Wilson**; branch, a small left-hand branch of Laurel Creek, a tributary to New River, in Fayette County.
- Wilson**; branch, a very small right-hand tributary to Kanawha River in Kanawha County.
- Wilson**; creek, a small right-hand branch of Twelvepole Creek, a tributary to Ohio River, in Wayne County.
- Wilson**; fork, a small left-hand branch of Laurel Patch Run in Braxton County.
- Wilson**; post village in Grant County on North Fork of Potomac River and on the West Virginia Central and Pittsburg Railway. Altitude, 2,512 feet.
- Wilson**; run, a small right-hand tributary to South Fork of Potomac River in Hardy and Pendleton counties.
- Wilson**; run, a right-hand branch of South Fork of Fishing Creek in Wetzel County.
- Wilsonburg**; post village in Harrison County, on the Baltimore and Ohio Railroad.
- Wilsendale**; post village in Wayne County on the Chesapeake and Ohio Railway and on the Right Fork of Twelvepole Creek.
- Wilsonia**; post village and railway station in Grant county, situated on North Branch of Potomac River, also on West Virginia Central and Pittsburgh Railway. Altitude, 2,747 feet.
- Wilson Knob**; summit in Upshur County.
- Winding Gulf**; right-hand head fork of Guyandot River in Raleigh County.
- Wind Mill**; gap, in Great Flat Top Mountain in Mercer County.
- Windmill Gap**; branch, a right-hand tributary to North Fork of Elkhorn Creek in McDowell County.
- Windom**; post village in Wyoming County on the West Virginia Central and Pittsburg Railway.
- Windy**; post village in Wirt County.
- Windy**; run, a small right-hand tributary to Little Birch River in Braxton County.
- Windy**; run, a small right-hand tributary to Valley River in Randolph County.
- Winfield**; county seat of Putnam County. Population, 338.
- Wingrove**; branch, a small right-hand tributary to Sand Lick Creek, a branch of Marsh Fork of Coal River, in Raleigh County.
- Winifrede**; post village in Kanawha County on the Chesapeake and Ohio Railway and the Winifrede Railroad.
- Winnie**; village in Wirt County.
- Winona**; post village in Fayette County.
- Winters**; run, a right-hand tributary of Wheeling Creek in Marshall County.
- Wirt**; county, situated in the western part of the State on the lower slope of the Alleghany Plateau. Area, 254 square miles. Population, 10,284—white, 10,220; negro, 64; foreign born, 19. County seat, Elizabeth. The mean magnetic declination in 1900 was 3°. The mean annual rainfall is 40 to 50 inches, and the mean annual temperature 50° to 55°. The county is traversed by the Little Kanawha Railroad.
- Wise**; post village in Monongalia County.
- Wise**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.
- Wiseburg**; post village in Jackson County.
- Witchers**; creek, a left-hand tributary to Kanawha River in Kanawha County.
- Wolf**; creek, a small left-hand tributary to Greenbrier River in Summers County, joining it at The Big Bend.

- Wolf**; creek, a small left-hand tributary to Greenbrier River in Monroe County.
- Wolf**; creek, a small left-hand tributary to Bluestone River in Mercer County.
- Wolf**; a left-hand tributary to New River in Fayette County.
- Wolf**; creek, a left-hand branch of Skin Creek, a tributary to West Fork of Monongahela River, in Lewis County.
- Wolf**; creek, a left-hand tributary to Elk River in Braxton County.
- Wolf**; creek, a small right-hand tributary to Cheat River in Preston County.
- Wolf**; gap in Pretty Ridge in Wyoming County.
- Wolf**; hill in Morgan County. Elevation, 900 feet.
- Wolf**; run, a small right-hand tributary to Skin Creek in Lewis County.
- Wolf**; run, a right-hand branch of Fish Creek in Wetzel County.
- Wolf Creek**; mountain, a short ridge in Monroe County. Altitude, 2,500 to 2,810 feet, the highest point the height of one peak.
- Wolf Creek**; mountain, a short, curved ridge in Summers County. Altitude, 2,000 to 2,500 feet.
- Wolfcreek**; post village in Monroe County on the Chesapeake and Ohio Railway.
- Wolf Fork**; mountain, a short ridge in Lewis County.
- Wolfpen**; branch, a very small right-hand branch of Big Sycamore Creek, a tributary to Elk River, in Clay County.
- Wolf Pen**; branch, a small right-hand tributary to Clear Fork, a branch of Tug Fork of Big Sandy River, in McDowell County.
- Wolfpen**; branch, a very small right-hand tributary to Beech Fork of Twelvepole Creek, a branch of Ohio River, in Wayne County.
- Wolfpen**; branch, a small right-hand tributary to Indian Creek, a branch of Guyandot River, in Wyoming County.
- Wolfpen**; branch, a small right-hand branch of Little Sandy Creek, a tributary to Elk River, in Kanawha County.
- Wolfpen**; branch, a very small left-hand tributary to Guyandot River in Wyoming County.
- Wolfpen**; branch, a very small left-hand tributary to Clear Fork of Guyandot River in Wyoming County.
- Wolf Pen**; run, a small left-hand tributary to Birch River in Braxton County.
- Wolf Pen**; run, a small left-hand tributary to West Fork of Monongahela River in Lewis County.
- Wolf Pen**; run, a right-hand branch of Sand Fork in Lewis County.
- Wolf Pen**; run, a small right-hand branch of Stewart Creek in Gilmer County.
- Wolf Pen**; run, a small right-hand tributary to Right Fork of Steer Creek in Braxton County.
- Wolf Pen Ridge**; short range in the central part of Pocahontas County.
- Wolfpit**; fork, a small left-hand tributary to Little Coal River, a branch of Coal River, in Lincoln County.
- Wolfrun**; post village in Marshall County.
- Wolf Summit**; post village in Harrison County on the Baltimore and Ohio Railroad.
- Womelsdorf**; post village in Randolph County.
- Wood**; county, situated in the western part of the State on the Ohio River and lying at the foot of the Allegheny Plateau. Area, 357 square miles. Population, 34,452—white, 33,528; negro, 922; foreign born, 925. County seat, Parkersburg. The mean magnetic declination in 1900 was 1° 10'. The mean annual rainfall is 40 to 50 inches, and the temperature 50° to 55°. The county is traversed by the Baltimore and Ohio, the Baltimore and Ohio Southwestern, the Little Kanawha, and Ohio River railroads.
- Woodbine**; post village in Nicholas County.

**Woodlands**; post village in Marshall County.

**Woodrow**; post village in Morgan County on the West Virginia Central and Pittsburgh Railway.

**Woodruff**; post village in Marshall County on the Baltimore and Ohio Railroad.

**Woodrum**; branch, a very small right-hand branch of Powellton Fork of Armstrong Creek, a tributary to Kanawha River, in Fayette County.

**Woods**; run, a small right-hand tributary to Greenbrier River in Pocahontas County.

**Woods**; run, a right-hand branch of Wheeling Creek in Ohio County.

**Woodward**; branch, a small right-hand branch of Twomile Creek, a tributary to Kanawha River, in Kanawha County.

**Woodyard**; post village in Roane County.

**Woodzell**; post village in Webster County.

**Woosley**; post village in Wyoming County.

**Workman**; branch, a small right-hand tributary to Pond Fork of Little Coal River, a branch of Coal River, in Boone County.

**Workman**; branch, a very small right-hand tributary to Pinnacle Creek, a branch of Guyandot River, in Wyoming County.

**Workman**; creek, a small left-hand tributary to Clear Fork of Coal River in Raleigh County.

**Workman Knob**; summit in Boone County.

**Worley**; post village in Monongalia County on the Chesapeake and Ohio Railway.

**Worth**; post village in McDowell County.

**Worthington**; post village in Marion County on the Baltimore and Ohio Railroad.

**Wrack Timber**; run, a small right-hand tributary to Holly River in Webster County.

**Wright**; post village in Raleigh County on the Chesapeake and Ohio Railway.

**Wyant**; fork, a right-hand branch of Grass Run in Gilmer County.

**Wyatt**; post village in Harrison County.

**Wyatt**; run, a left-hand branch of Left Fork of Steep Creek in Braxton County.

**Wylies**; falls in New River on boundary between Mercer and Summers counties.

**Wyoma**; post village in Mason County.

**Wyoming**; county, situated in the southern part of the State and drained by Guyandot River. The Allegheny Plateau is here deeply dissected. Area, 526 square miles. Population, 8,380—white, 8,286; negro, 94; foreign born, 5. County seat, Oceana. The mean magnetic declination in 1900 was 1°. The mean annual rainfall is 50 to 60 inches, and the mean annual temperature 50° to 55°.

**Yankeedam**; post village in Clay County on the Charleston, Clendennin and Sutton Railroad.

**Yeager**; post village in Mason County.

**Yeager**; run, a left-hand branch of West Virginia Fork of Dunkard Creek in Monongalia County.

**Yelk**; post village in Pocahontas County.

**Yellow**; creek, a small right-hand tributary to Blackwater River in Tucker County.

**Yellowspring**; post village in Hampshire County.

**Yellow Spring**; run, a left-hand branch of Sleepy Creek in Morgan County.

**Yew**; mountains, a broken mountainous range extending into Greenbrier and Webster counties. Altitude, 3,000 to 4,000 feet.

**Yokum**; post village in Upshur County.

**Yokums Knob**; summit in the Allegheny Mountains in Randolph County. Altitude, 4,330 feet.

**Yorkville**; post village in Wayne County.

**Youngs**; mountain, a summit in Day Mountain in Pocahontas County.

**Youngs Knob**; summit in Kanawha County.

**Zackville**; post village in Wirt County.

**Zar**; post village in Preston County.

**Zebs**; creek, a small left-hand tributary to Valley River in Barbour and Randolph counties.

**Zela**; post village in Nicholas County.

**Zenith**; post village in Monroe County.

**Zinnia**; post village in Doddridge County.

**Zona**; post village in Roane County.

**Zypho**; post village in Harrison County.

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## PUBLICATIONS OF UNITED STATES GEOLOGICAL SURVEY.

[Bulletin No. 233.]

The publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

The Professional Papers, Bulletins, and Water-Supply Papers treat of a variety of subjects, and the total number issued is large. They have therefore been classified into the following series: A, Economic geology; B, Descriptive geology; C, Systematic geology and paleontology; D, Petrography and mineralogy; E, Chemistry and physics; F, Geography; G, Miscellaneous; H, Forestry; I, Irrigation; J, Water storage; K, Pumping water; L, Quality of water; M, General hydrographic investigations; N, Water power; O, Underground waters; P, Hydrographic progress reports. This bulletin is the forty-first in Series F, the complete list of which follows (all are bulletins thus far):

### SERIES F, GEOGRAPHY.

5. Dictionary of altitudes in United States, by Henry Gannett. 1884. 325 pp. (Out of stock; see Bulletin 160.)
6. Elevations in Dominion of Canada, by J. W. Spencer. 1884. 43 pp. (Out of stock.)
13. Boundaries of United States and of the several States and Territories, with historical sketch of territorial changes, by Henry Gannett. 1885. 135 pp. (Out of stock; see Bulletin 171.)
48. On form and position of sea level, by R. S. Woodward. 1888. 88 pp. (Out of stock.)
49. Latitudes and longitudes of certain points in Missouri, Kansas, and New Mexico, by R. S. Woodward. 1889. 133 pp.
50. Formulas and tables to facilitate the construction and use of maps, by R. S. Woodward. 1889. 124 pp. (Out of stock.)
70. Report on astronomical work of 1889 and 1890, by R. S. Woodward. 1890. 79 pp.
72. Altitudes between Lake Superior and Rocky Mountains, by Warren Upham. 1891. 229 pp.
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DEPARTMENT OF THE INTERIOR  
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**GEOGRAPHIC**  
**TABLES AND FORMULAS**  
(SECOND EDITION)

COMPILED BY

**SAMUEL S. GANNETT**



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1904



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## LETTER OF TRANSMITTAL.

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DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
*Washington, D. C., April 21, 1904.*

SIR: I have the honor to transmit herewith, in form for publication, the second edition (with corrections and additions) of certain geographic tables and formulas pertaining to the work of the topographic branch of this Survey. As stated in the letter of transmittal of the first edition, published as Bulletin 214, the endeavor has been to bring together all tables and formulas used by the topographer in the field and office, and it is believed that their publication will be useful not only to the topographic corps but to others engaged in similar lines of work. The material has been drawn from various sources, some of it having been prepared from time to time by various members of the Geological Survey and the remaining portions having been taken principally from publications of the United States Coast and Geodetic Survey and the Smithsonian Institution.

The matter has been revised by Mr. E. M. Douglas and Mr. H. L. Baldwin, jr.

Very respectfully,

S. S. GANNETT,  
*Geographer in Charge*  
*Section of Triangulation and Computing.*

HON. CHARLES D. WALCOTT,  
*Director United States Geological Survey.*



# GEOGRAPHIC TABLES AND FORMULAS.

(SECOND EDITION.)

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Compiled by S. S. GANNETT.

---

## RULES FOR SOLUTION OF RIGHT-ANGLED TRIANGLES.

The “parts” of the figures are—

H=hypotenuse,

P=perpendicular,

B=base,

and the six circular functions of the angle  $\alpha$  at the base of the triangle.

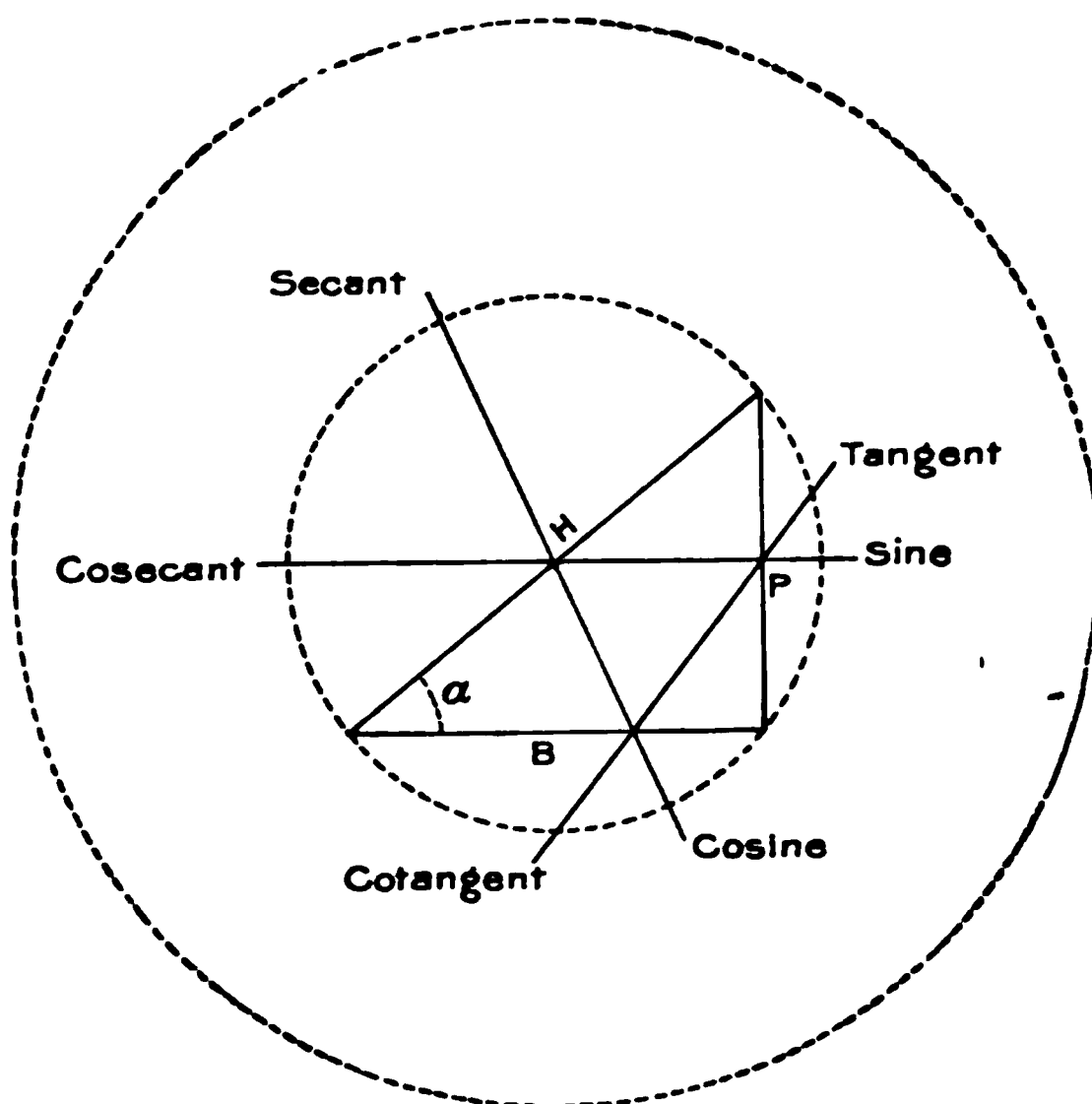


FIG. 1.—Solution of right-angled triangles.

**RULE I.** The product of two opposite parts = 1,  $\therefore$  either is the reciprocal of the other.

Example:  $\tan \alpha \times \cot \alpha = 1$ ,  $\tan \alpha = \frac{1}{\cot \alpha}$ .

**Rule II.** Each part=adjacent part divided by the following part,  $\therefore$  each part=the product of the adjacent parts.

Example:  $\sin \alpha = \frac{\cos \alpha}{\cot \alpha}$ ,  $\sin \alpha = \frac{P}{H}$ ,  $B = H \times \cos \alpha$ .

## REDUCTION TO CENTER.

In fig. 2 let

P=place of instrument;

C=center of station;

Q=measured angle at P between two objects, A and B;

$y$ =angle at P between C and the left-hand object, B;

$r$ =distance CP;

$C'$ =unknown and required angle at C;

D=distance AC;

( $r$  and D must be reduced to same unit, usually meters.)

G=distance BC;

A=angle at A between P and C;

B=angle at B between P and C.

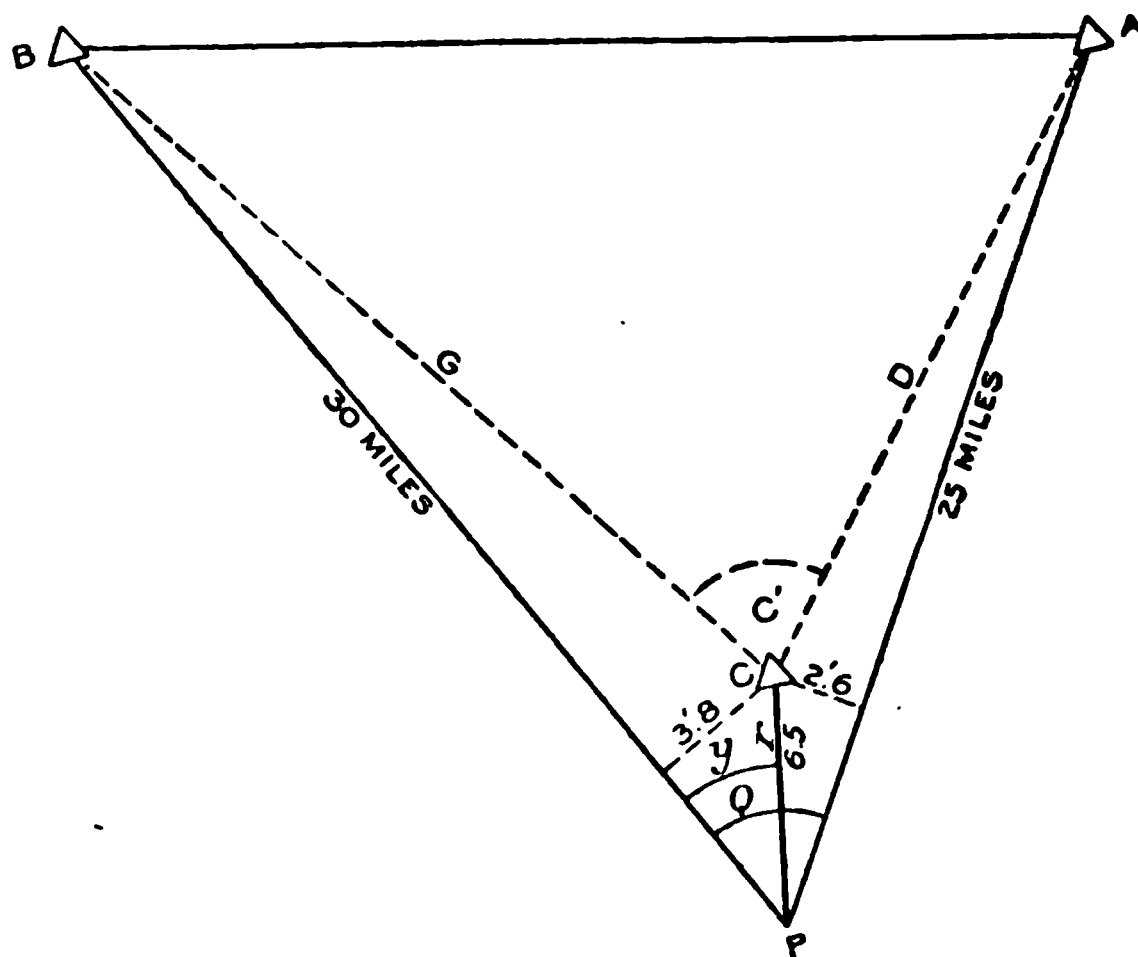


FIG. 2.—Reduction to center.

Then, from the relation between the parts of the triangle,

$$G : r :: \sin y : \sin B;$$

hence

$$\sin B = \frac{r \sin y}{G}.$$

As the angles at A and B are very small, their sines may be regarded as equal to  $A \sin 1''$  and  $B \sin 1''$ , respectively; hence

$$B = (\text{in seconds}) \frac{r \sin y}{G \sin 1''}$$

and

$$C' = Q + \frac{r \sin (Q \pm y)}{D \sin 1''} - \frac{r \sin y}{G \sin 1''}.$$

In the use of this formula, proper attention should be paid to the signs of  $\sin (Q+y)$  and  $\sin y$ ; for the first term will be positive only when  $(Q+y)$  is less than  $180^{\circ}$  (the reverse with  $\sin y$ );  $D$  being the distance of the right-hand object, the graduation of the instrument running from left to right.

$r$  being relatively small, the lengths of  $D$  and  $G$  are approximately computed with the angle  $Q$ .

The following quantities must be known in addition to the measured angles in order to find the correction for reducing to center:

1. The angle measured at the instrument,  $P$ , between the center of the signal or station,  $C$ , and the first-observed station to the right of it,  $A$ .
2. The distance from the center of the instrument to the center of the station  $= r$ .
3. The approximate distances,  $D$ ,  $G$ , etc., from the station occupied to the stations observed. The latter may be computed from the uncorrected angles.

Example: Reduction to center from  $P$  to  $C$ .

Constants: a. c.  $\log \sin 1''$ 

$=5.31443$

$\log \text{ feet to log meters}$ 

$=9.48402$

$\log \text{ constant (for any station)}$ 

$4.79845$

$r=6.5 \text{ feet: log}$ 

$=0.81291$

$\log \text{ constant for this station}$ 

$5.61136$

	Angle Q—Y (CPA) 23° 40'	Angle Y (BPC) 37°14' or 322° 46'
log sin angle .....	9.6036	9.7818
a. c. log distance .....	5.3954	5.3162
log $r$ + constant .....	5.6114	5.6114
log correction .....	0.6104	0.7094
correction to direction .....	4".08	5".12
correction to angle B P A = 4".08 + 5".12 = 9".20.		

## GRAPHIC REDUCTION TO CENTER.

Approximate closure errors of triangles may be tested in the field before distances have been computed by scaling from the plot the distances between stations in miles and the perpendicular distance in feet from signal to line joining instrument and distant station.

Then, since 1 foot at a distance of 40 miles subtends an angle of 1" (nearly),

$$\frac{\text{length of perpendicular in feet} \times 40}{\text{number of miles}} = \text{correction in seconds.}$$

Example: Station P. Correction for swing on line B P, 30 miles in length from instrument to signal

$$= \frac{3.8 \text{ feet} \times 40}{30} = 5''.1,$$

correction for swing on line A P, 25 miles in length,

$$= \frac{2.6 \text{ feet} \times 40}{25} = 4''.2,$$

and correction to angle B P A = Q to reduce from instrument to signal =  $5.1'' + 4.2'' = 9.3''$ , agreeing closely with the exact computation.

## APPROXIMATE SPHERICAL EXCESS IN SECONDS.

This may be obtained by dividing the area of the triangle in square miles by 75.5.

## SOLUTION OF TRIANGLES.

Given two sides and included angle, to solve the triangle:

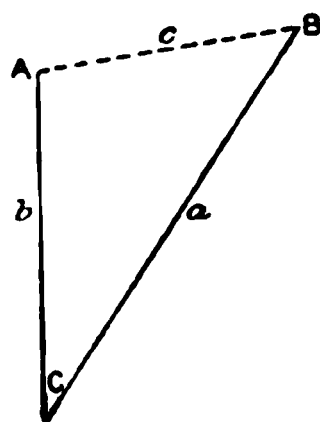


FIG. 3.—Solution of triangles; two sides and included angle given.

Let  $x$  be an auxiliary angle; then

$$\tan x = \frac{b}{a}, \text{ or } \log \tan x = \log a - \log b;$$

$$\tan \frac{1}{2} (A - B) = \tan (x - 45^\circ) \tan \frac{1}{2} (A + B);$$

$$\frac{1}{2} (A + B) + \frac{1}{2} (A - B) = A;$$

$$\frac{1}{2} (A + B) - \frac{1}{2} (A - B) = B;$$

from which remaining parts can be computed.



Example:

Given  $\log a=4.3666779$   
Given  $\log b=4.2050498$

(1)  $\tan x=0.1616281$   
 $x=55^{\circ} 25' 25''.41$   
  
-45  
—  
(5)  $\text{Log tan } (x-45^{\circ})=10^{\circ} 25' 25''.41=9.2647291$   
(6)  $\text{Log tan } 79 \ 22 \ 33 .00=0.7268100$   
  
(7)  $9.9915391=\tan \frac{1}{2} (A-B)$

Given  $C$  (spherical angle)  $21^{\circ} 14' 54''.10$   
Given  $\frac{1}{2}$  sph. exc. — .10

$C$  (plane angle)=  $21 \ 14 \ 54 .00$  (2)  
180  
—  
 $180^{\circ}-C=A+B=158 \ 45 \ 06 .00$  (3)  
  
 $\frac{1}{2} (A+B)=79^{\circ} 22' 33''.00$  (4)  
  
—  
 $\text{sum}=A=123^{\circ} 49' 03''.90$  (8)  
 $\text{difference}=B=34 \ 56 \ 02 .10$  (9)

(10)

Check.			
$A=123^{\circ} 49' 03''.90$	a. c.	$\log a$	$=4.3666779$
$B=34 \ 56 \ 02 .10$		$\log \sin A$	$=0.0804971$
$C=21 \ 14 \ 54 .00$		$\log \sin B$	$=9.7578749$
		$\log \sin C$	$=9.5592012$
<hr/>			
$\text{Sum}=180 \ 00 \ 00 .00$		$\log c$	$=4.0063762$
		$\log b$	$=4.2050499$

THREE-POINT PROBLEM.

If three points, forming a triangle of which the sides and angles are known or can be computed, be visible from a fourth point, P, it is required to determine the position of P.

Set up the theodolite at P and measure the two angles subtended by any two of the given sides.

This problem is of use in cases where, the regular triangulation having been completed, additional points are required for the topographic survey, or are needed for special service. The angles should be carefully measured, and in the computations the logarithms should be carried to seven places of decimals.

Three cases of its application are given, as in others, such as when P falls upon one or another of the sides of the known triangle, or on the prolongation of either, the case resolves itself into the solution of a simple triangle with one side and the angles given; or the problem is indeterminate, as when P is situated on the circumference of the circle passing through the three known points—a contingency which rarely occurs.

Example for each of the three cases.

Given the side  $a=11204.5$

Given the side  $b= 7289.0$

Given the side  $c= 6273.8$

Given the angle  $A=111^{\circ} 10' 54''$

Angle observed  $A P C=P'$

Angle observed  $A P B=P''$

To find  $A B P=x$

To find  $A C P=y$

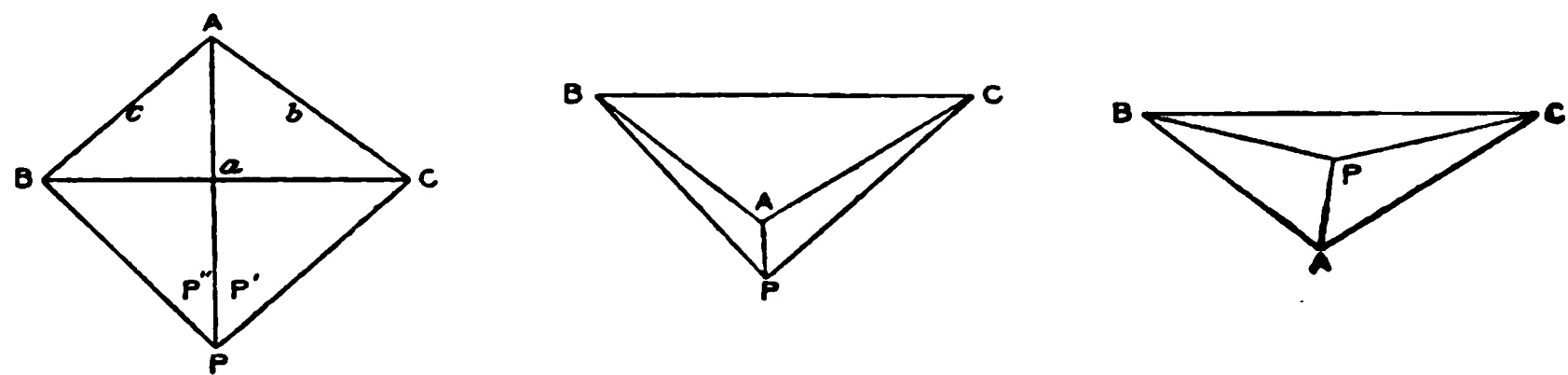


FIG. 4.—Three-point problem; computation.

$P' \dots 50^{\circ} 06' 12''$	$P' \dots 49^{\circ} 47' 20''$	$P' \dots 104^{\circ} 00' 00''$
$P'' \dots 43^{\circ} 50' 38''$	$P'' \dots 44^{\circ} 09' 30''$	$P'' \dots 100^{\circ} 20' 00''$
$S \dots 180^{\circ} - \frac{1}{2}(A + P' + P'')$	$S \dots \frac{1}{2}(A - P' - P'')$	$S \dots 180^{\circ} - \frac{1}{2}(A + P' + P'')$
$S \dots 77^{\circ} 26' 08''$	$S \dots 8^{\circ} 37' 02''$	$S \dots 22^{\circ} 14' 33''$

$\tan Z = \frac{c \sin P'}{b \sin P''}$

$\epsilon = \frac{1}{2}(x - y)$

$\tan \epsilon = \cot (Z + 45^{\circ}) \tan S$

$x = S + \epsilon$

$y = S - \epsilon$ , but if  $\tan \epsilon$  be negative, then  $x = S - \epsilon$ ,

$y = S + \epsilon$

Computation.

$\log c \dots 3.7975307$	$\log c \dots 3.7975397$	$\log c \dots 3.7975307$
$\log \sin P' \dots 9.8849100$	$\log \sin P' \dots 9.8839061$	$\log \sin P' \dots 9.9869041$
$\text{colog } b \dots 6.1373320$	$\text{colog } b \dots 6.1373320$	$\text{colog } b \dots 6.1373320$
$\text{colog } \sin P'' \dots 0.1594574$	$\text{colog } \sin P'' \dots 0.1569894$	$\text{colog } \sin P'' \dots 0.0071016$
$\log \tan Z \dots 9.9792301$	$\log \tan Z \dots 9.9747583$	$\log \tan Z \dots 9.9288684$
$Z \dots 43^{\circ} 37' 49''.6$	$Z \dots 43^{\circ} 20' 09''.2$	$Z \dots 40^{\circ} 19' 43''.3$
$\log \cot (Z + 45^{\circ}) \dots 8.3785397$	$\log \cot (Z + 45^{\circ}) \dots 8.4631818$	$\log \cot (Z + 45^{\circ}) \dots 8.9122794$
$\log \tan S \dots 0.6519386$	$\log \tan S \dots 9.1805366$	$\log \tan S \dots 9.6116787$
$\log \tan \epsilon \dots 9.0304783$	$\log \tan \epsilon \dots 7.6437184$	$\log \tan \epsilon \dots 8.5239581$
$\epsilon \dots 6^{\circ} 07' 21''.7$	$\epsilon \dots 0^{\circ} 15' 08''.1$	$\epsilon \dots 1^{\circ} 54' 50''.04$
$S \dots 77^{\circ} 26' 08''.0$	$S \dots 8^{\circ} 37' 02''.0$	$S \dots 22^{\circ} 14' 33''.00$
$x \dots 83^{\circ} 33' 29''.7$	$x \dots 8^{\circ} 52' 10''.1$	$x \dots 24^{\circ} 09' 23''.00$
$y \dots 71^{\circ} 18' 46''.3$	$y \dots 8^{\circ} 21' 53''.9$	$y \dots 20^{\circ} 19' 43''.00$
Hence,	Hence,	Hence,
$P A B \dots 52^{\circ} 35' 52''.3$	$P A B \dots 126^{\circ} 58' 19''.9$	$P A B \dots 55^{\circ} 30' 37''.00$
$P A C \dots 58^{\circ} 35' 01''.7$	$P A C \dots 121^{\circ} 50' 46''.1$	$P A C \dots 55^{\circ} 40' 17''.00$

As all the angles and a side in each triangle are now known, the other sides, or the distances from P to the three given points, can be readily computed.

	<i>m</i>		<i>m</i>		<i>m</i>
P B .....	7194.87	P B .....	7194.94	P B .....	5256.29
P A .....	8999.89	P A .....	1388.54	P A .....	2609.75
P C .....	8107.98	P C .....	8107.91	P C .....	6203.63
P A .....	8999.89	P A .....	1388.54	P A .....	2609.75

The results are verified when both triangles give the same value for the line P A.

GRAPHIC SOLUTION OF THE THREE-POINT PROBLEM.

- 1. When new point is within the triangle formed by the three points, point sought is within the triangle of error.
- 2. When new point is on or near the circle passing through the other points, *the location is uncertain*.
- 3. When new point is within either of the three shaded segments of the circle (see diagram below), orient on middle point; then the line from middle point lies between true point and point of intersection of lines from other two points.
- 4. When new point is without the circle, orient on most distant point; then the point sought is always on the same side of the line from most distant point as the point of intersection of the other two lines.

NOTE.—Since a location can be made from any three points, whether correctly plotted or not, therefore always check such locations by means of a fourth point if possible.

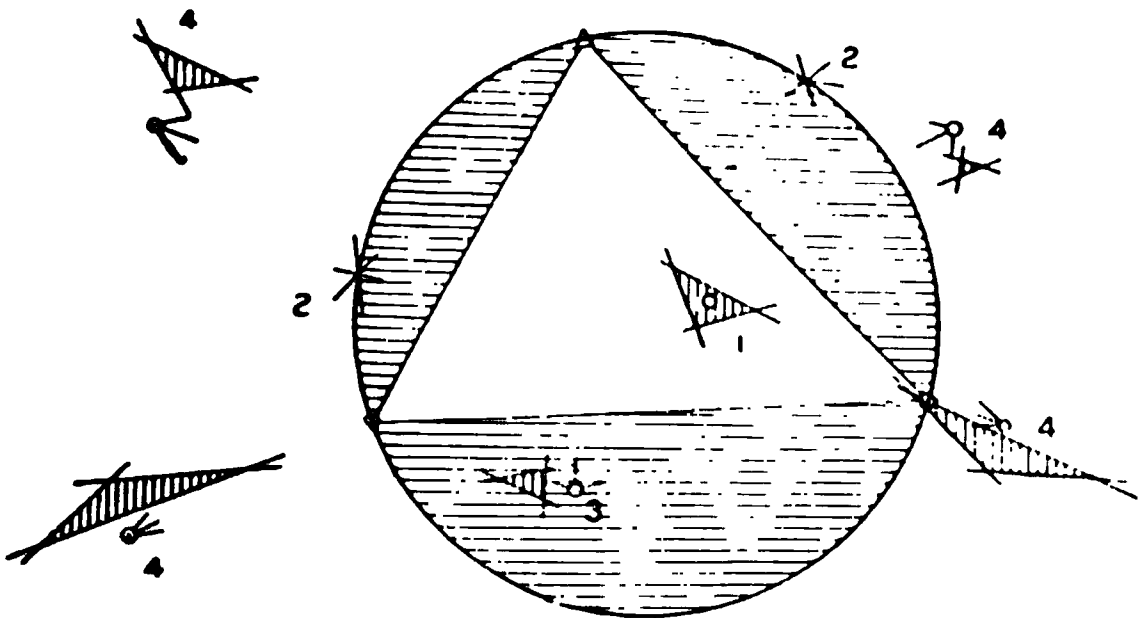


FIG. 5.—Three-point problem; graphic solution.

## METHOD OF FIXING A MERIDIAN AT ANY TIME BY HOUR ANGLE.

[Extracted from United States Land Survey Manual.]

The annexed diagram (fig. 6) will show in their proper relation the various aspects of Polaris in its daily apparent motion around the north-polar point.

This must be carefully studied, as the illustration of Table 1, for finding at any hour the hour angle and azimuth of Polaris, and the resulting meridian, at times when more direct methods are not available.

*Hour angle of Polaris.*—In fig. 6 the full vertical line represents a portion of the meridian passing through the zenith *Z* (the point directly overhead), and intersecting the northern horizon at the north point *N*, from which, for surveying purposes, the azimuths of Polaris

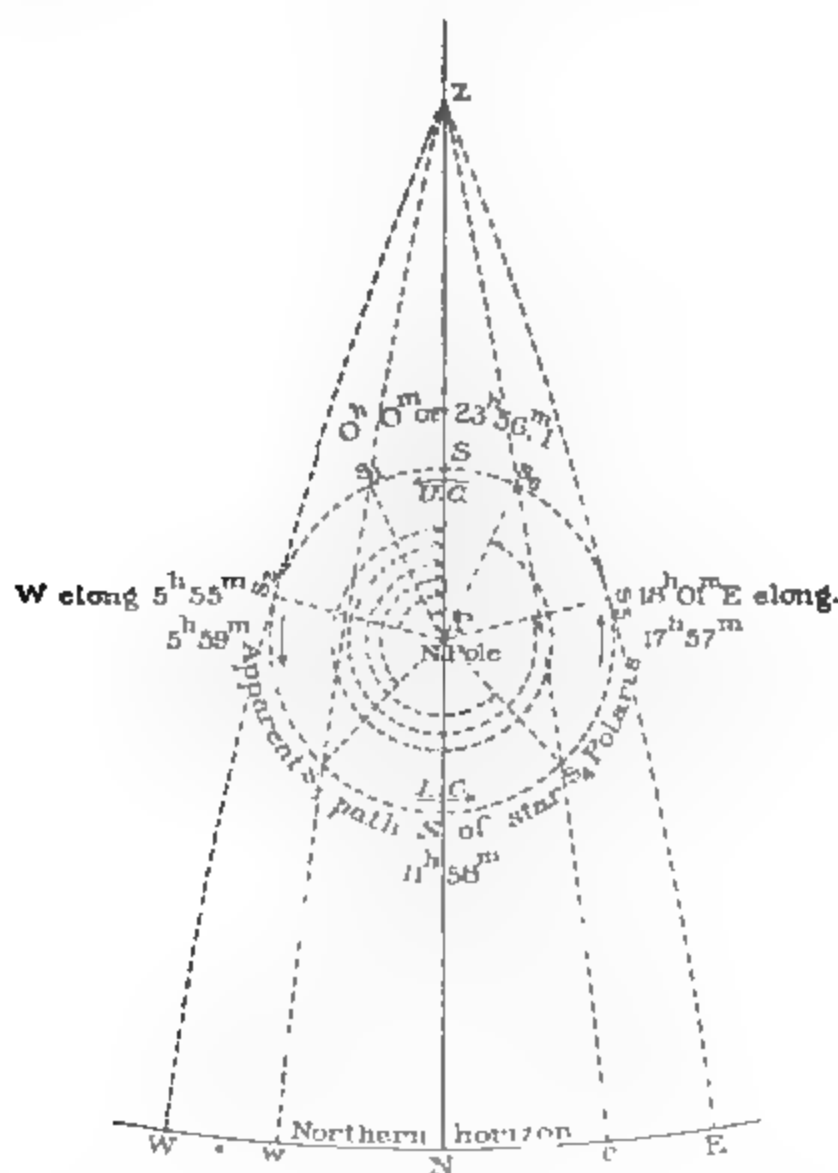


FIG. 6.—Aspects of Polaris

are reckoned east or west. The meridian is pointed out by the plumb line when it is in the same plane with the eye of the observer and Polaris on the meridian, and a visual representation is also seen in the vertical wire of the transit, when it covers the star on the meridian.

When Polaris crosses the meridian it is said to culminate; above the

pole (at S), the passage is called the upper culmination, in contradistinction to the lower culmination (at S').

In the diagram—which the surveyor may better understand by holding it up perpendicular to the line of sight when he looks toward the pole—Polaris is supposed to be on the meridian, where it will be about noon on April 10 of each year. The star appears to revolve around the pole, in the direction of the arrows, once in every  $23^{\text{h}} 56^{\text{m}}.1$  of mean solar time; it consequently comes to and crosses the meridian, or culminates, nearly four minutes earlier each successive day. The apparent motion of the star being uniform, one quarter of the circle will (omitting fractions) be described in  $5^{\text{h}} 59^{\text{m}}$ , one half in  $11^{\text{h}} 58^{\text{m}}$ , and three quarters in  $17^{\text{h}} 57^{\text{m}}$ . For the positions  $s_1, s_2, s_3$ , etc., the angles  $SPs_1, SPs_2, SPs_3$ , etc., are called hour angles of Polaris, for the instant the star is at  $s_1, s_2$ , or  $s_3$ , etc., and they are measured by the arcs  $Ss_1, Ss_2, Ss_3$ , etc., expressed (in these instructions) in mean solar (common clock) time, and are always counted from the upper meridian (at S), to the west, around the circle from  $0^{\text{h}} 0^{\text{m}}$  to  $23^{\text{h}} 56^{\text{m}}.1$ , and may have any value between the limits named. The hour angles, measured by the arcs  $Ss_1, Ss_2, Ss_3, Ss_4, Ss_5$ , and  $Ss_6$ , are approximately  $1^{\text{h}} 8^{\text{m}}, 5^{\text{h}} 55^{\text{m}}, 9^{\text{h}} 4^{\text{m}}, 14^{\text{h}} 52^{\text{m}}, 18^{\text{h}} 01^{\text{m}}$ , and  $22^{\text{h}} 48^{\text{m}}$ , respectively; their extent is also indicated graphically by broken fractional circles about the pole.

Suppose the star observed at the point  $S_3$ ; the time it was at S (the time of upper culmination), taken from the time of observation, will leave the arc  $Ss_3$ , or the hour angle at the instant of observation; similar relations will obtain when the star is observed in any other position; therefore, in general:

*Subtract the time of upper culmination from the correct local mean time of observation; the remainder will be the hour angle of Polaris expressed in time, or the “argument for Table 3.”*

The observation may be made at any instant when Polaris is visible, the exact time being carefully noted.

TABLES.

TABLE 1.—*Local mean (astronomical) time of the culminations and elongations of Polaris in the year 1902.*

[From Magnetic Declination Tables, U. S. Coast and Geodetic Survey. Computed for latitude 40° north and longitude 90° or 6<sup>h</sup> west of Greenwich.]

Date.	East elonga- tion.		Upper culmi- nation.		West elonga- tion.		Lower culmi- nation.	
1902	h	m	h	m	h	m	h	m
January 1.....	0	45.8	6	40.6	12	35.3	18	38.7
January 15.....	23	46.6	5	45.3	11	40.0	17	43.4
February 1.....	22	39.5	4	38.2	10	32.9	16	36.3
February 15.....	21	44.2	3	42.9	9	37.7	15	41.0
March 1.....	20	49.0	2	47.7	8	42.4	14	45.8
March 15.....	19	54.0	1	52.7	7	47.3	13	50.7
April 1.....	18	47.0	0	45.6	6	40.3	12	43.7
April 15.....	17	52.0	23	46.7	5	45.3	11	48.6
May 1.....	16	49.1	22	43.8	4	42.5	10	45.7
May 15.....	15	54.2	21	48.9	3	47.6	9	50.8
June 1.....	14	47.5	20	42.3	2	40.9	8	44.2
June 15.....	13	52.6	19	47.4	1	46.0	7	49.3
July 1.....	12	50.0	18	44.8	0	43.4	6	46.7
July 15.....	11	55.1	17	49.9	23	44.6	5	51.8
August 1.....	10	48.6	16	43.4	22	38.0	4	45.3
August 15.....	9	53.7	15	48.5	21	43.1	3	50.4
September 1.....	8	47.1	14	41.9	20	36.5	2	43.8
September 15.....	7	52.2	13	47.0	19	41.6	1	48.9
October 1.....	6	49.3	12	44.1	18	38.7	0	46.0
October 15.....	5	54.3	11	49.1	17	43.7	23	47.2
November 1.....	4	47.5	10	42.3	16	36.9	22	40.4
November 15.....	3	52.3	9	47.1	15	41.8	21	45.2
December 1.....	2	49.3	8	44.1	14	38.8	20	42.2
December 15.....	1	54.0	7	48.8	13	43.6	19	46.9

A. *To refer the above tabular quantities to years subsequent to 1902:*

For year 1903 add	1.4	minutes.	
1904	{add 2.8	“	up to March 1
	{subtract 1.1	“	on and after March 1
1905 add	0.2	“	
1906 “	1.5	“	
1907 “	2.9	“	
1908 “	{4.2	“	up to March 1
	{0.3	“	on and after March 1
1909 “	1.7	“	
1910 “	3.0	“	

B. *To refer to any calendar day other than the first and fifteenth of each month:* SUBTRACT the quantities below from the tabular quantity for the PRECEDING DATE.

Day of month.	Minutes.	Number of days elapsed.
2 or 16	3.9	1
3 17	7.9	2
4 18	11.8	3
5 19	15.8	4
6 20	19.7	5
7 21	23.6	6
8 22	27.6	7
9 23	31.5	8
10 24	35.5	9
11 25	39.4	10
12 26	43.3	11
13 27	47.3	12
14 28	51.2	13
29	55.2	14
30	59.1	15
31	63.0	16

C. *To refer the table to standard time and to the civil or common method of reckoning:*

(<sup>a</sup>) ADD to the tabular quantities four minutes for every degree of longitude the place is west of the standard meridian, and SUBTRACT when the place is east of the standard meridian.

(<sup>b</sup>) The astronomical day begins twelve hours after the civil day, i. e., begins at noon on the civil day of the same date, and is reckoned from 0 to 24 hours. Consequently an astronomical time less than twelve hours refers to the same civil day, whereas an astronomical time greater than twelve hours refers to the morning of the next civil day.

It will be noticed that for the tabular year two eastern elongations occur on January 12 and two western elongations on July 12. There are also two upper culminations on April 12 and two lower culminations on October 12. The lower culmination either follows or precedes the upper culmination by 11<sup>h</sup> 58<sup>m</sup>.1.

D. *To refer to any other than the tabular latitude between the limits of 25° and 50° north:* ADD to the time of west elongation 0<sup>m</sup>.13 for every degree south of 40°, and SUBTRACT from the time of west elongation 0<sup>m</sup>.18 for every degree north of 40°. Reverse these operations for correcting times of east elongation.



E. *To refer to any other than the tabular longitude:* ADD 0<sup>m</sup>.16 for each 15° east of the ninetieth meridian, and SUBTRACT 0<sup>m</sup>.16 for each 15° west of the ninetieth meridian.

A few examples will illustrate the use of table 1.

1. Required the time of upper culmination of Polaris for a station in longitude 90° west, for March 3, 1904.

	h.	m.
Astron. time, U. C. of Polaris, 1904, March 1 .....	2	46.6
Reduction for two days, 7 <sup>m</sup> .9 (B) (subtract).....		7.9
	<hr/>	
Local mean time U. C. of Polaris, 1904, March 3 .....	2	38.7

The required time may also be obtained by using the table in the opposite direction, i. e., by taking the time for March 15, and adding the reduction as follows:

	h.	m.
Astron. time U. C. of Polaris, 1904, March 15 .....	1	51.6
Reduction for twelve days, add.....		47.3
	<hr/>	
Local mean time U. C. of Polaris, 1904, March 3.....	2	38.9

In this case the two results are practically identical. If the computation is made both ways, the results will check each other. B has been inserted to save the surveyor the little trouble of making the multiplications; thus, for the above example, in the table under B, opposite the third or seventeenth day of the month in the left hand column, will be found the correction 7<sup>m</sup>.9.

Computing from a preceding date, for days between April 11 and 15 of any year, the reduction in B will be greater than the tabulated time of culmination, in which case 23<sup>h</sup> 56<sup>m</sup>.1 will be added, to make the subtraction possible.

2. Required, for a station in longitude 90° west, the time of U. C. of Polaris for April 14, 1906:

	h.	m.
Astron. time, U. C. of Polaris, 1906, April 1 .....	0	47.1
Add.....	23	56.1
	<hr/>	
Sum.....	24	43.2
Reduction to April 14, subtract.....		51.2
	<hr/>	
Local mean time U. C. of Polaris, April 14 .....	23	52.0

Working from a following date, for days between 9th and 15th of April, the sum will exceed 23<sup>h</sup> 56<sup>m</sup>.1, and when this occurs subtract 23<sup>h</sup> 56<sup>m</sup>.1 from the sum, and the remainder will be the required time.

3. Required, for a station in longitude 90° west, the time of U. C. of Polaris for April 10, 1904.

	h.	m.
Astron. time, U. C. of Polaris, 1904, April 15.....	23	45.6
Reduction for five days, add .....		19.7
	<hr/>	
Sum.....	24	05.3
Subtract.....	23	56.1
	<hr/>	
Local mean time, U. C. of Polaris, 1904, April 10.....	0	09.2

For further application of table 1 see pp. 26 and 27.

TABLE 2.—Azimuth of Polaris when at elongation for any year between 1902 and 1910.

Latitude.	1902.0	1903.0	1904.0	1905.0	1906.0	1907.0	1908.0	1909.0	1910.0
	°   '   "	°   '   "	°   '   "	°   '   "	°   '   "	°   '   "	°   '   "	°   '   "	°   '   "
25°	1 20.5	1 20.1	1 19.8	1 19.4	1 19.1	1 18.7	1 18.4	1 18.1	1 17.7
26	21.1	20.8	20.5	20.1	19.8	19.4	19.1	18.7	18.4
27	21.9	21.5	21.2	20.8	20.5	20.1	19.8	19.4	19.1
28	22.6	22.2	21.9	21.6	21.3	20.9	20.5	20.1	19.8
29	23.4	23.0	22.7	22.4	22.1	21.7	21.3	20.9	20.5
30	24.2	23.9	23.5	23.1	22.8	22.4	22.1	21.7	21.3
31	25.1	24.7	24.4	24.0	23.6	23.2	22.9	22.5	22.2
32	26.0	25.6	25.3	24.9	24.5	24.1	23.8	23.4	23.1
33	27.0	26.6	26.2	25.9	25.5	25.1	24.7	24.3	24.0
34	28.0	27.6	27.2	26.9	26.5	26.1	25.7	25.3	25.0
35	29.0	28.7	28.3	27.9	27.5	27.1	26.8	26.4	26.0
36	30.1	29.8	29.4	29.0	28.6	28.2	27.9	27.5	27.1
37	31.3	30.9	30.5	30.1	29.7	29.3	29.0	28.6	28.2
38	32.6	32.2	31.8	31.4	31.0	30.6	30.2	29.8	29.4
39	33.9	33.5	33.1	32.7	32.3	31.8	31.4	31.0	30.6
40	35.2	34.8	34.4	34.0	33.6	33.2	32.8	32.4	32.0
41	36.7	36.2	35.8	35.4	35.0	34.6	34.2	33.8	33.4
42	38.2	37.7	37.3	36.9	36.5	36.0	35.6	35.2	34.8
43	39.8	39.3	38.9	38.5	38.1	37.6	37.2	36.8	36.3
44	41.4	41.0	40.5	40.1	39.7	39.2	38.8	38.4	37.9
45	43.2	42.7	42.3	41.8	41.4	40.9	40.5	40.1	39.6
46	45.0	44.6	44.2	43.7	43.2	42.7	42.3	41.9	41.4
47	46.9	46.5	46.0	45.6	45.1	44.6	44.2	43.7	43.3
48	49.0	48.6	48.1	47.7	47.2	46.7	46.3	45.8	45.3
49	51.2	50.7	50.2	49.8	49.3	48.8	48.4	47.9	47.4
50	1 53.5	1 53.0	1 52.5	1 52.0	1 51.5	1 51.0	1 50.6	1 50.1	1 49.6

The above table was computed with mean declination of Polaris for each year. A more accurate result will be had by applying to the tabular values the following correction, which depends on the difference of the mean and the apparent place of the star. The deduced azimuth will in general be correct within 0'.3.

For middle of—	Correction.	For middle of—	Correction.
	'		'
January .....	—0.4	July .....	+0.3
February .....	—0.3	August .....	+0.1
March .....	—0.2	September .....	—0.1
April .....	0.0	October .....	—0.3
May .....	+0.2	November .....	—0.6
June .....	+0.3	December .....	—0.8

TABLE 3.—Azimuths of Polaris

[From U. S. Land Survey Manual] The hour angles are expressed in mean solar time. The occurrence

STAR AND AZIMUTH									POLARIS above THE POLE.																	
W. of N. when hour angle is less than 11 <sup>h</sup> 56 <sup>m</sup> . E. of N. when hour angle is greater than 11 <sup>h</sup> 56 <sup>m</sup> . Time argument, the star's hour angle or 23 <sup>h</sup> 56 <sup>m</sup> 1 <sup>s</sup> minus the star's hour angle, for the year—									To determine the true meridian, the azimuth will be laid off to the east when the hour angle is less than 11 <sup>h</sup> 56 <sup>m</sup> , and to the west when greater than 11 <sup>h</sup> 56 <sup>m</sup> .																	
									Azimuths for latitude—																	
Hours.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	30	32	34	36	38	40	42	44	46	48	50							
h.	m.	0	5	10	15	20	25	30	0	2	4	6	8	10	12	14	16	18	20							
									1	3	5	7	9	11	13	15	17	19	21	23						
									2	4	6	8	10	12	14	16	18	20	22	24						
									3	5	7	9	11	13	15	17	19	21	23	25						
									4	6	8	10	12	14	16	18	20	22	24	26						
									5	7	9	11	13	15	17	19	21	23	25	27						
									6	8	10	12	14	16	18	20	22	24	26	28						
									7	9	11	13	15	17	19	21	23	25	27	29						
									8	10	12	14	16	18	20	22	24	26	28	30						
									9	11	13	15	17	19	21	23	25	27	29	31						
									10	12	14	16	18	20	22	24	26	28	30	32						
									11	13	15	17	19	21	23	25	27	29	31	33						
									12	14	16	18	20	22	24	26	28	30	32	34						
									13	15	17	19	21	23	25	27	29	31	33	35						
									14	16	18	20	22	24	26	28	30	32	34	36						
									15	17	19	21	23	25	27	29	31	33	35	37						
									16	18	20	22	24	26	28	30	32	34	36	38						
									17	19	21	23	25	27	29	31	33	35	37	39						
									18	20	22	24	26	28	30	32	34	36	38	40						
									19	21	23	25	27	29	31	33	35	37	39	41						
									20	22	24	26	28	30	32	34	36	38	40	42						
									21	23	25	27	29	31	33	35	37	39	41	43						
									22	24	26	28	30	32	34	36	38	40	42	44						
									23	25	27	29	31	33	35	37	39	41	43	45						
									24	26	28	30	32	34	36	38	40	42	44	46						
									25	27	29	31	33	35	37	39	41	43	45	47						
									26	28	30	32	34	36	38	40	42	44	46	48						
									27	29	31	33	35	37	39	41	43	45	47	49						
									28	30	32	34	36	38	40	42	44	46	48	50						
									29	31	33	35	37	39	41	43	45	47	49	51						
									30	32	34	36	38	40	42	44	46	48	50	52						
									31	33	35	37	39	41	43	45	47	49	51	53						
									32	34	36	38	40	42	44	46	48	50	52	54						
									33	35	37	39	41	43	45	47	49	51	53	55						
									34	36	38	40	42	44	46	48	50	52	54	56						
									35	37	39	41	43	45	47	49	51	53	55	57						
									36	38	40	42	44	46	48	50	52	54	56	58						
									37	39	41	43	45	47	49	51	53	55	57	59						
									38	40	42	44	46	48	50	52	54	56	58	60						
									39	41	43	45	47	49	51	53	55	57	59	61						
									40	42	44	46	48	50	52	54	56	58	60	62						
									41	43	45	47	49	51	53	55	57	59	61	63						
									42	44	46	48	50	52	54	56	58	60	62	64						
									43	45	47	49	51	53	55	57	59	61	63	65						
									44	46	48	50	52	54	56	58	60	62	64	66						
									45	47	49	51	53	55	57	59	61	63	65	67						
									46	48	50	52	54	56	58	60	62	64	66	68						
									47	49	51	53	55	57	59	61	63	65	67	69						
									48	50	52	54	56	58	60	62	64	66	68	70						
									49	51	53	55	57	59	61	63	65	67	69	71						
									50	52	54	56	58	60	62	64	66	68	70	72						
									51	53	55	57	59	61	63	65	67	69	71	73						
									52	54	56	58	60	62	64	66	68	70	72	74						
									53	55	57	59	61	63	65	67	69	71	73	75						
									54	56	58	60	62	64	66	68	70	72	74	76						
									55	57	59	61	63	65	67	69	71	73	75	77						
									56	58	60	62	64	66	68	70	72	74	76	78						
									57	59	61	63	65	67	69	71	73	75	77	79						
									58	60	62	64	66	68	70	72	74	76	78	80						
									59	61	63	65	67	69	71	73	75	77	79	81						
									60	62	64	66	68	70	72	74	76	78	80	82						
									61	63	65	67	69	71	73	75	77	79	81	83						
									62	64	66	68	70	72	74	76	78	80	82	84						
									63	65	67	69	71	73	75	77	79	81	83	85						
									64	66	68	70	72	74	76	78	80	82	84	86						
									65	67	69	71	73	75	77	79	81	83	85	87						
									66	68	70	72	74	76	78	80	82	84	86	88						
									67	69	71	73	75	77	79	81	83	85	87	89						
									68	70	72	74	76	78	80	82	84	86	88	90						
									69	71	73	75	77	79	81	83	85	87	89	91						
									70	72	74	76	78	80	82	84	86	88	90	92						
									71	73	75	77	79	81	83	85	87	89	91	93						
									72	74	76	78	80	82	84	86	88	90	92	94						
									73	75	77	79	81	83	85	87	89	91	93	95						
									74	76	78	80	82	84	86	88	90	92	94	96						
									75	77	79	81	83	85	87	89	91	93	95	97						
									76	78	80	82	84	86	88	90	92	94	96	98						
									77	79	81	83	85	87	89	91	93	95	97	99						
									78	80	82	84	86	88	90	92	94	96	98	100						
									79	81	83	85	87	89	91	93	95	97	99	101						
									80	82	84	86	88	90	92	94	96	98	100	102						
									81	83	85	87	89	91	93	95	97	99	101	103						
									82	84	86	88	90	92	94	96	98	100	102	104						
									83	85	87	89	91	93	95	97	99	101	103	105						
									84	86	88	90	92	94	96	98	100	102	104	106						
									85	87	89	91	93	95	97	99	101	103	105	107						
									86	88	90	92	94	96	98	100	102	104	106	108						
									87	89	91	93	95	97	99	101	103	105	107	109						
									88	90	92	94	96	98	100	102	104	106	108	110						
									89	91	93	95	97	99	101	103	105	107	109	111						
									90	92	94	96	98	100	102	104	106	108	110	112						



Table 3 gives for various hour angles, expressed in mean solar time and for even degrees of latitude from 30 to 50 degrees, the azimuths of Polaris for eight years, computed for average values of the north polar distance of the star, the arguments being the hour angle (or  $23^h 56^m.1$  minus the hour angle when the latter exceeds  $11^h 58^m$ ), which is termed the time argument,<sup>a</sup> and the latitude of the place of observation. The table is so extended that azimuths may be taken out by inspection and all interpolation avoided, except such as can be performed mentally.

The hours of the "time arguments" are placed in the columns headed "hours," on the left of each page. The minutes of the time arguments will be found in the columns marked "m," under the years for which they are computed, and they are included between the same heavy zigzag lines which inclose the hours to which they belong.

The time arguments are given to the nearest half minute; the occurrence of a period after the minutes of any one of them indicates that its value is  $0^m.5$  greater than printed, the table being so arranged to economize space.

The table will be used as follows: Find the *hours* of the time argument in the left-hand column of either page; then, between the heavy lines which inclose the hours, find the *minutes* in the column marked at the top with the current year. On the same horizontal line with the *minutes* the azimuth will be found under the given latitude, which is marked at the top of the right-hand half of each page. Thus, for 1904, time argument  $0^h 43^m$ , latitude  $36^\circ$ , find  $0^h$  on left-hand page, and under 1904 find  $43^m$  on tenth line from the top, and on same line with the minutes, under latitude  $36^\circ$ , is the azimuth  $0^\circ 17'$ . For 1908, time argument  $9^h 33\frac{1}{2}^m$ , latitude  $48^\circ$ , the azimuth is  $1^\circ 1\frac{1}{2}'$ , found on the twenty-first line from the top of right-hand page.

If the exact time argument is not found in the table, the azimuth should be proportioned to the difference between the given and tabular values of said argument.

The table has been arranged to give the azimuths by simple inspection. No written arithmetical work is required, all being performed mentally. It will always be sufficient to take the nearest whole degree of latitude and use it as above directed, except for a few values near the top of either page where the difference of azimuths for  $2^\circ$  difference of latitude amounts to four or five minutes of arc.

<sup>a</sup>The vertical diameter  $SS'$ , fig. 6, divides the apparent path of Polaris into two equal parts, and for the star at any point  $s_0$  on the east side is a corresponding point  $s_1$  on the west side of the meridian, for which azimuth  $Nw$  is equal to the azimuth  $Nc$ . The arc,  $Ss_1 S's_0$ , taken from the entire circle (or  $23^h 56^m.1$ ), leaves the arc  $Ss_0$ , and its equal  $Ss_1$ , expressed in time, may be used to find, from table 3, the azimuth  $Nw$ , which is equal to  $Nc$ .

The hour angles entered in table 3 include only those of the west half of the circle ending at  $S$ , and when an hour angle greater than  $11^h 58^m$  results from observation it will be subtracted from  $23^h 56^m.1$ , and the remainder will be used as the "time argument" for the table. The surveyor should not confound these two quantities. The hour angle itself always decides the direction of the azimuth and defines the place of the star with reference to the pole and meridian, as noted at top of table 3. See examples.

The attention of the observer is directed to the fact that he should always use one day of twenty-four hours as the unit when he subtracts the time of culmination from the time of observation. In any case when the time of upper culmination, taken from table 1, for the given date would be numerically greater than the astronomical time of observation, the former time will be taken out for a date one day earlier than the date of observation. The surveyor will decide when such condition exists by comparing the time given in the table with his astronomical time of observation. (See Example 4 and explanations in footnotes, page 26.)

The watch time to be used when making observations on Polaris at all times except elongation should be as accurate as can be obtained. Looking at table 3 near top of page 22, the surveyor will observe that for a difference of four minutes in the time argument there is a change of about two minutes in azimuth; consequently, to obtain the azimuth to the nearest whole minute of arc, the local mean time, upon which all depends, should be known within two minutes. When the observer uses standard railroad time he will correct the same for the difference of longitude between his station and the standard meridian for which the time is given at the rate of four minutes of time for each degree of the difference in arc. Thus, if the difference in longitude is  $6^{\circ} 45'$ , the equivalent in time will be twenty-seven minutes. The difference of longitude may be taken from a good map. The correction will be subtracted from the standard railroad time of observation when the surveyor's station is west, or added when east of the standard meridian, as the case may require, to obtain local time. It is immaterial where the surveyor obtains the standard time provided he gets it right, a result which will be gained most easily by a direct personal comparison at a telegraph office.

If the direction of the meridian is known with an error not greater than one-fourth of a degree, the local time can be obtained to the nearest minute by observing the sun's transit by the following method, suggested by Mr. H. L. Baldwin, jr.

The transit being in meridian and carefully leveled, place the telescope so that it will point toward the sun at the time the latter comes to the meridian and allow the magnified image of the sun to fall upon a notebook or sheet of white paper about 1 foot distant from eyepiece. The telescope should be slightly out of focus (lengthened) to get best results, the best focal position to be determined by trial. When the vertical cross wire bisects the sun's image, note the time by watch. This will be the time of apparent noon. To get time of mean noon, correct the noted time by adding or subtracting the equation of time, taken from the Nautical Almanac "to reduce apparent noon to mean noon," or get this from any almanac giving "sun fast" or "sun slow" time.

Example.

June 20, 1903.			
Watch time of sun's transit .....	h.	m.	s.
Equation of time .....	11	50	25
		+1	04
Local mean noon .....	11	51	29
Or watch slow .....		8	31

The error of observation should not exceed two or three seconds and the error resulting from incorrect meridian will be approximately four seconds for each 1' error in meridian.

APPLICATIONS OF TABLES 1 AND 3.

1. Required the hour angle and azimuth of Polaris, for a station in latitude 46° N., longitude 90° W., at 8<sup>h</sup> 24<sup>m</sup> p. m., November 7, 1910.

	h.	m.
Astronomical time of observation, 1910, November 7.....	8	24.0
Equivalent to time of November 6.....	32	24.0
	h.	m.
Astron. time, U. C. Polaris, November 1 (table 1) ..	10	45.3
Reduction to November 6 <sup>a</sup> (B), subtract.....		<sup>b</sup> 19.7
Astron. time, U. C. Polaris, November 6.....	10	25.6, subtract .
	<sup>c</sup> 10	25.6
Hour angle of Polaris, at observation .....	21	58.4
Subtract from .....	<sup>d</sup> 23	56.1
Time argument for table 3 .....	1	57.7
Azimuth of Polaris, at observation.....		0° 51' E.

2. Required the hour angle and azimuth of Polaris, for a station in latitude 41° 12' N., longitude 94° W., at 6<sup>h</sup> 16<sup>m</sup> a. m., November 19, 1904.

	h.	m.
Astronomical time of observation, 1904, November 18.....	18	16.0
	h.	m.
Astron. time, U. C. Polaris, November 15 (table 1) ..	9	47.1
Reduction to November 18, subtract.....		11.8
Astron. time, U. C. Polaris, November 18.....	9	35.3, subtract .
	9	35.3
Hour angle of Polaris, at observation, and time argument for table 3.....	<sup>e</sup> 8	40.7
Azimuth of Polaris, at observation (table 3), 72' or.....		<sup>f</sup> 1° 12' W.

The following four examples illustrate any difficulties in the use of tables 1 and 3:

<sup>a</sup> By reference to the above table, the surveyor will observe that the times, between November 1 and 15, are greater than 8<sup>h</sup> 24<sup>m</sup>; consequently, the culmination for one day earlier, November 6, will be used.  
<sup>b</sup> From table 1, opposite sixth day of month.  
<sup>c</sup> To subtract, take one day from November 7, and add its equivalent, 24<sup>h</sup>, to 8<sup>h</sup> 24<sup>m</sup>, making, November 6, 32<sup>h</sup> 24<sup>m</sup> (which is the time expressed by November 7, 8<sup>h</sup> 24<sup>m</sup>); then subtract in the usual manner.  
<sup>d</sup> See last clause of footnote, page 24.  
<sup>e</sup> In case the hour angle comes out greater than 11<sup>h</sup> 58<sup>m</sup>, subtract it from 23<sup>h</sup> 56<sup>m</sup>.1; see example 4, above.  
<sup>f</sup> The hour angle being less than 11<sup>h</sup> 58<sup>m</sup>, the azimuth is west; see precepts, top of table 3.



EVENING OBSERVATIONS.

1. February 20, 1904, at 7<sup>h</sup> 42<sup>m</sup>.5 p. m., local mean time, Polaris is observed at a station in southern California, latitude 36°, longitude 117°.

			h.	m.
Time of observation .....			7	42.5
		h.	m.	
From table 1, U. C. Polaris, February 15.....	3	45.7		
Reduction to February 20 .....		19.7		
			3	26.0

Time elapsed since preceding culmination ..... 4 16.5  
From table 3 corresponding azimuth is 80'.5=1° 20'.5.

2. May 9, 1904, at 8<sup>h</sup> 56<sup>m</sup>.4 p. m., local mean time, Polaris is observed at a station in northeastern Minnesota, latitude 48°, longitude 90°. The nearest culmination is that of May 8.

			h.	m.
Time of observation May 9, 1904, 8 <sup>h</sup> 56 <sup>m</sup> .4, or May 8.....			32	56.4
		h.	m.	
From table 1, U. C., May 1, 1904 .....	22	42.7		
Reduction to May 8 .....		27.6		
			22	15.1

Time elapsed since preceding culmination..... 10 41.3  
From table 3, corresponding azimuth is 34'.

MORNING OBSERVATIONS.

3. May 10, 1904, at 5<sup>h</sup> 13<sup>m</sup> a. m., local mean time, or May 9, 17<sup>h</sup> 13<sup>m</sup>, astronomical time, Polaris is observed at a station in northeastern Minnesota, latitude 48°, longitude 90°.

			h.	m.
Time of observation, May 9, 1904.....			17	13.0
		h.	m.	
From table 1, U. C., May 1 .....	22	42.7		
Reduction to May 9 .....		31.5		
			22	11.2

Time to elapse to next following culmination..... 4 58.2  
From table 3 corresponding azimuth is 104'.3=1° 44'.3

4. February 21, 1904, at 5<sup>h</sup> 10<sup>m</sup> a. m., local mean time, Polaris is observed at a station in southern California, latitude 36°, longitude 117°. The nearest culmination is on February 21.

			h.	m.
Time of observation, February 20.....			17	10.0
		h.	m.	
From table 1, U. C., February 15.....	3	45.7		
Reduction to February 20 .....		19.7		
			3	26.0
		h.	m.	
			23	56.1
			27	22.1

Time to elapse to next following culmination..... 10 12.1  
From table 3, corresponding azimuth is 39'.3.

TABLE 4.—AZIMUTH AND APPARENT ALTITUDE OF POLARIS AT DIFFERENT HOUR ANGLES.

[From U. S. Coast and Geodetic Survey Report for 1895.]

The accompanying tables are intended for field use, to facilitate placing an instrument in the meridian. They are also suitable for determining the approximate latitude or meridian. They contain the azimuth of Polaris at intervals of fifteen minutes in hour angle for each degree of north latitude from 30° to 60°, and the apparent altitude at the same intervals and for each fifth degree of latitude.<sup>a</sup> The tables are computed for the declination of Polaris 88° 46', but the rate of change in both azimuth and altitude is given with the argument 1' increase in declination.<sup>b</sup> The tables are intended to be used in connection with the American Ephemeris, where are given the apparent right ascension and declination of Polaris for each day in the year. The approximate local time will in general be known with sufficient accuracy from standard time and the approximate longitude of the place. The following example explains the use of the tables and the derivation of the hour angle of Polaris:

Position, latitude 36° 20' N., longitude 5<sup>h</sup> 20<sup>m</sup> 30<sup>s</sup> W. of Greenwich.

	h.	m.	s.
Time of observation, July 10, 1895, standard (75th mer.) mean time	8	52	40 p. m.
Reduction to local time	—	20	30
Local mean time	8	32	10
Reduction to sidereal time (Table III, Amer. Ephem.)	+	1	24
Sidereal time mean noon, Greenwich, July 10, 1895	7	12	38
Correction for longitude, 5 <sup>h</sup> 20 <sup>m</sup> 30 <sup>s</sup> (Table III, Amer. Ephem.)	+	0	53
Local sidereal time	15	47	05
Apparent right ascension of Polaris, July 10, 1895	1	20	18
Hour angle before upper culmination	9	33	13

<sup>a</sup>The tables were computed with the following formulas:

$$\begin{aligned} \tan a &= \frac{\sin t}{\cos \varphi \tan \delta - \sin \varphi \cos t} \\ \sin h &= \sin \varphi \sin \delta + \cos \varphi \cos \delta \cos t, \\ \sin a_e &= \frac{\cos \delta}{\cos \varphi}, \\ \cos t_e &= \cot \delta \tan \varphi; \end{aligned}$$

where  $a$  = azimuth from true north,  
 $t$  = hour angle,  
 $\varphi$  = latitude,  
 $\delta$  = declination,  
 $h$  = true altitude,  
 $a_e$  = azimuth at elongation,  
 $t_e$  = hour angle at elongation.

<sup>b</sup>As the corrections are given with proper sign for increase in declination over 88° 46', they are to be applied with reversed sign while the declination is less than 88° 46', as it will be until near the close of the century.

	°	'	''		°	'
Declination of table	88	46				
Apparent declination, July 10, 1895	88	44	47			
	<hr/>					
Increase in declination	—	1	13	=	—1'	2
Values from tables (interpolated) azimuth	0	54	12	apparent altitude	35	21.8
Correction for—1'.2 increase in declination			+52			—1.0
	<hr/>				<hr/>	
	0	55	04		35	20.8
	East of north					

It is to be remembered that Polaris is east of the meridian for twelve hours before upper culmination, and west of the meridian for twelve hours after. By setting the instrument at the apparent altitude and sweeping near the meridian Polaris can ordinarily be found and the instrument placed in the meridian some time before dark. With transit instruments not provided with horizontal arc, the value of the azimuth adjusting screw may be readily determined and used.

Without the American Ephemeris these tables may be conveniently used for obtaining the approximate meridian or latitude, in connection with Bulletin 14, United States Coast and Geodetic Survey,<sup>a</sup> where are given the approximate mean times of culminations of Polaris, and the mean declinations for various epochs.

<sup>a</sup> Approximate Times of Culminations and Elongations and of the Azimuths at Elongation of Polaris for the Years between 1889 and 1910.

The mean places of Polaris are given as follows:

	• α			δ		
	<i>h.</i>	<i>m.</i>	<i>s.</i>	°	'	''
1895 .....	1	20	30.08	88	44	52.68
1900 .....	1	22	33.76	88	46	26.66
1905 .....	1	24	42.48	88	48	00.31
1910 .....	1	26	56.58	88	49	33.61

TABLE 4.—Azimuth and apparent altitude

Hour angle before or after upper culmination.	Azimuth of Polaris computed for declination 88° 46'.					
	Latitude 30°.	Latitude 31°.	Latitude 32°.	Latitude 33°.	Latitude 34°.	Latitude 35°.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
0 15	0 05 40	0 05 43	0 05 47	0 05 51	0 05 55	0 06 00
0 30	0 11 18	0 11 25	0 11 33	0 11 41	0 11 49	0 11 58
0 45	0 16 53	0 17 04	0 17 15	0 17 27	0 17 40	0 17 53
1 00	0 22 23	0 22 38	0 22 53	0 23 09	0 23 26	0 23 44
1 15	0 27 48	0 28 06	0 28 25	0 28 45	0 29 06	0 29 28
1 30	0 33 05	0 33 26	0 33 49	0 34 13	0 34 38	0 35 04
1 45	0 38 13	0 38 38	0 39 04	0 39 32	0 40 00	0 40 30
2 00	0 43 12	0 43 40	0 44 09	0 44 40	0 45 12	0 45 46
2 15	0 47 58	0 48 29	0 49 02	0 49 36	0 50 12	0 50 50
2 30	0 52 32	0 53 06	0 53 42	0 54 19	0 54 59	0 55 40
2 45	0 56 52	0 57 29	0 58 07	0 58 48	0 59 30	1 00 15
3 00	1 00 58	1 01 37	1 02 18	1 03 01	1 03 46	1 04 34
3 15	1 04 47	1 05 28	1 06 12	1 06 58	1 07 46	1 08 36
3 30	1 08 19	1 09 02	1 09 48	1 10 36	1 11 27	1 12 20
3 45	1 11 33	1 12 18	1 13 06	1 13 56	1 14 49	1 15 45
4 00	1 14 28	1 15 15	1 16 05	1 16 57	1 17 52	1 18 50
4 15	1 17 04	1 17 52	1 18 44	1 19 37	1 20 34	1 21 34
4 30	1 19 19	1 20 09	1 21 02	1 21 57	1 22 55	1 23 57
4 45	1 21 14	1 22 05	1 22 59	1 23 55	1 24 55	1 25 57
5 00	1 22 48	1 23 40	1 24 35	1 25 32	1 26 32	1 27 36
5 15	1 24 00	1 24 53	1 25 48	1 26 46	1 27 47	1 28 51
5 30	1 24 51	1 25 44	1 26 40	1 27 38	1 28 39	1 29 44
5 45	1 25 20	1 26 13	1 27 09	1 28 07	1 29 09	1 30 14
6 00	1 25 27	1 26 19	1 27 15	1 28 14	1 29 15	1 30 20
6 15	1 25 12	1 26 04	1 26 59	1 27 57	1 28 59	1 30 03
6 30	1 24 34	1 25 27	1 26 21	1 27 19	1 28 19	1 29 23
6 45	1 23 36	1 24 27	1 25 21	1 26 18	1 27 17	1 28 20
7 00	1 22 16	1 23 06	1 23 59	1 24 55	1 25 53	1 26 55
7 15	1 20 35	1 21 25	1 22 16	1 23 10	1 24 08	1 25 08
7 30	1 18 34	1 19 22	1 20 12	1 21 05	1 22 00	1 22 59
7 45	1 16 13	1 16 59	1 17 48	1 18 39	1 19 33	1 20 29
8 00	1 13 33	1 14 17	1 15 04	1 15 53	1 16 45	1 17 39
8 15	1 10 34	1 11 16	1 12 01	1 12 48	1 13 37	1 14 29
8 30	1 07 17	1 07 57	1 08 40	1 09 25	1 10 12	1 11 01
8 45	1 03 43	1 04 22	1 05 02	1 05 44	1 06 29	1 07 15
9 00	0 59 54	1 00 30	1 01 07	1 01 47	1 02 29	1 03 12
9 15	0 55 49	0 56 23	0 56 58	0 57 34	0 58 13	0 58 54
9 30	0 51 31	0 52 01	0 52 34	0 53 08	0 53 43	0 54 21
9 45	0 46 59	0 47 27	0 47 57	0 48 28	0 49 00	0 49 34
10 00	0 42 16	0 42 42	0 43 08	0 43 36	0 44 05	0 44 35
10 15	0 37 23	0 37 45	0 38 08	0 38 33	0 38 59	0 39 26
10 30	0 32 20	0 32 39	0 32 59	0 33 20	0 33 43	0 34 06
10 45	0 27 09	0 27 25	0 27 42	0 28 00	0 28 18	0 28 38
11 00	0 21 51	0 22 04	0 22 18	0 22 32	0 22 47	0 23 03
11 15	0 16 28	0 16 38	0 16 48	0 16 59	0 17 10	0 17 22
11 30	0 11 01	0 11 08	0 11 14	0 11 22	0 11 29	0 11 37
11 45	0 05 31	0 05 34	0 05 38	0 05 42	0 05 45	0 05 49
Elongation:						
Azimuth . . .	1 25 27	1 26 20	1 27 16	1 28 14	1 29 16	1 30 20
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
Hour angle.	5 57 09	5 57 02	5 56 55	5 56 48	5 56 40	5 56 33

of Polaris at different hour angles.

Azimuth of Polaris computed for declination 88° 46'.					Correction for 1' increase in declination of Polaris.		Hour angle before or after upper culmination.
Latitude 36°.	Latitude 37°.	Latitude 38°.	Latitude 39°.	Latitude 40°.	Latitude 30°.	Latitude 40°.	
° ' "	° ' "	° ' "	° ' "	° ' "	"	"	h. m.
0 06 05	0 06 10	0 06 15	0 06 20	0 06 26	— 5	— 5	0 15
0 12 08	0 12 18	0 12 28	0 12 39	0 12 50	— 9	—10	0 30
0 18 07	0 18 22	0 18 38	0 18 54	0 19 11	—14	—16	0 45
0 24 02	0 24 22	0 24 43	0 25 04	0 25 27	—18	—21	1 00
0 29 51	0 30 15	0 30 41	0 31 08	0 31 36	—23	—26	1 15
0 35 31	0 36 00	0 36 31	0 37 02	0 37 36	—27	—31	1 30
0 41 02	0 41 35	0 42 11	0 42 47	0 43 26	—31	—36	1 45
0 46 22	0 47 00	0 47 39	0 48 21	0 49 04	—35	—40	2 00
0 51 29	0 52 11	0 52 55	0 53 41	0 54 29	—39	—45	2 15
0 56 23	0 57 09	0 57 57	0 58 47	0 59 40	—43	—49	2 30
1 01 02	1 01 51	1 02 43	1 03 37	1 04 34	—46	—53	2 45
1 05 24	1 06 17	1 07 12	1 08 10	1 09 12	—50	—57	3 00
1 09 29	1 10 25	1 11 24	1 12 25	1 13 30	—53	—60	3 15
1 13 16	1 14 14	1 15 16	1 16 21	1 17 29	—56	—63	3 30
1 16 43	1 17 44	1 18 49	1 19 57	1 21 08	—58	—66	3 45
1 19 50	1 20 54	1 22 01	1 23 11	1 24 25	—61	—69	4 00
1 22 36	1 23 42	1 24 51	1 26 03	1 27 20	—63	—72	4 15
1 25 01	1 26 08	1 27 19	1 28 33	1 29 52	—64	—74	4 30
1 27 03	1 28 12	1 29 24	1 30 40	1 32 00	—66	—75	4 45
1 28 42	1 29 52	1 31 06	1 32 23	1 33 44	—68	—76	5 00
1 29 59	1 31 09	1 32 24	1 33 42	1 35 04	—69	—77	5 15
1 30 52	1 32 03	1 33 18	1 34 37	1 35 59	—69	—78	5 30
1 31 21	1 32 33	1 33 48	1 35 07	1 36 30	—70	—78	5 45
1 31 27	1 32 39	1 33 54	1 35 13	1 36 35	—70	—78	6 00
1 31 10	1 32 21	1 33 36	1 34 54	1 36 16	—69	—78	6 15
1 30 30	1 31 40	1 32 54	1 34 11	1 35 32	—68	—77	6 30
1 29 26	1 30 35	1 31 48	1 33 04	1 34 24	—67	—76	6 45
1 27 59	1 29 07	1 30 18	1 31 33	1 32 52	—66	—75	7 00
1 26 11	1 27 17	1 28 26	1 29 39	1 30 56	—65	—73	7 15
1 24 00	1 25 04	1 26 12	1 27 23	1 28 38	—64	—72	7 30
1 21 28	1 22 30	1 23 36	1 24 45	1 25 57	—62	—69	7 45
1 18 36	1 19 36	1 20 39	1 21 45	1 22 54	—60	—66	8 00
1 15 24	1 16 21	1 17 22	1 18 25	1 19 31	—57	—64	8 15
1 11 53	1 12 48	1 13 45	1 14 45	1 15 48	—54	—61	8 30
1 08 04	1 08 56	1 09 50	1 10 47	1 11 47	—51	—58	8 45
1 03 58	1 04 47	1 05 38	1 06 31	1 07 27	—48	—54	9 00
0 59 37	1 00 22	1 01 09	1 01 59	1 02 51	—45	—50	9 15
0 55 00	0 55 42	0 56 25	0 57 11	0 57 59	—42	—46	9 30
0 50 10	0 50 48	0 51 27	0 52 09	0 52 53	—38	—42	9 45
0 45 08	0 45 42	0 46 17	0 46 54	0 47 34	—34	—38	10 00
0 39 54	0 40 24	0 40 55	0 41 28	0 42 03	—30	—34	10 15
0 34 30	0 34 57	0 35 24	0 35 52	0 36 22	—26	—29	10 30
0 28 59	0 29 20	0 29 43	0 30 07	0 30 32	—22	—24	10 45
0 23 19	0 23 37	0 23 55	0 24 14	0 24 35	—18	—20	11 00
0 17 35	0 17 48	0 18 02	0 18 16	0 18 31	—13	—15	11 15
0 11 46	0 11 54	0 12 04	0 12 13	0 12 23	— 9	—10	11 30
0 05 53	0 05 58	0 06 02	0 06 07	0 06 12	— 4	— 5	11 45
1 31 28	1 32 40	1 33 55	1 35 14	1 36 36	—69	—78	
h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	s.	s.	
5 56 25	5 56 17	5 56 09	5 56 00	5 55 52	+ 2	+ 3	

TABLE 4.—Azimuth and apparent altitude

Hour angle before or after upper culmination.	Azimuth of Polaris computed for declination 88° 46'.					
	Latitude 40°.	Latitude 41°.	Latitude 42°.	Latitude 43°.	Latitude 44°.	Latitude 45°.
	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
h. m.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
0 15	0 06 26	0 06 32	0 06 39	0 06 45	0 06 52	0 07 00
0 30	0 12 50	0 13 03	0 13 15	0 13 29	0 13 43	0 13 58
0 45	0 19 11	0 19 30	0 19 48	0 20 08	0 20 29	0 20 52
1 00	0 25 27	0 25 51	0 26 16	0 26 43	0 27 10	0 27 40
1 15	0 31 36	0 32 05	0 32 36	0 33 09	0 33 44	0 34 21
1 30	0 37 36	0 38 11	0 38 48	0 39 27	0 40 09	0 40 52
1 45	0 43 26	0 44 07	0 44 50	0 45 35	0 46 22	0 47 12
2 00	0 49 04	0 49 50	0 50 39	0 51 29	0 52 23	0 53 19
2 15	0 54 29	0 55 20	0 56 14	0 57 10	0 58 10	0 59 12
2 30	0 59 40	1 00 35	1 01 34	1 02 36	1 03 41	1 04 49
2 45	1 04 34	1 05 34	1 06 38	1 07 44	1 08 54	1 10 08
3 00	1 09 12	1 10 16	1 11 24	1 12 35	1 13 50	1 15 09
3 15	1 13 30	1 14 38	1 15 50	1 17 06	1 18 25	1 19 49
3 30	1 17 29	1 18 41	1 19 57	1 21 16	1 22 39	1 24 08
3 45	1 21 08	1 22 23	1 23 42	1 25 04	1 26 32	1 28 04
4 00	1 24 25	1 25 43	1 27 05	1 28 31	1 30 01	1 31 37
4 15	1 27 20	1 28 40	1 30 04	1 31 33	1 33 07	1 34 45
4 30	1 29 52	1 31 14	1 32 41	1 34 12	1 35 48	1 37 29
4 45	1 32 00	1 33 24	1 34 53	1 36 25	1 38 04	1 39 47
5 00	1 33 44	1 35 10	1 36 40	1 38 14	1 39 54	1 41 38
5 15	1 35 04	1 36 30	1 38 02	1 39 37	1 41 18	1 43 04
5 30	1 35 59	1 37 26	1 38 58	1 40 34	1 42 16	1 44 02
5 45	1 36 30	1 37 57	1 39 29	1 41 05	1 42 47	1 44 34
6 00	1 36 35	1 38 02	1 39 34	1 41 10	1 42 51	1 44 38
6 15	1 36 16	1 37 43	1 39 14	1 40 49	1 42 30	1 44 16
6 30	1 35 32	1 36 58	1 38 28	1 40 03	1 41 42	1 43 27
6 45	1 34 24	1 35 48	1 37 17	1 38 50	1 40 28	1 42 12
7 00	1 32 52	1 34 15	1 35 42	1 37 13	1 38 49	1 40 31
7 15	1 30 56	1 32 17	1 33 42	1 35 11	1 36 45	1 38 24
7 30	1 28 38	1 29 56	1 31 19	1 32 46	1 34 17	1 35 53
7 45	1 25 57	1 27 13	1 28 33	1 29 56	1 31 25	1 32 58
8 00	1 22 54	1 24 07	1 25 24	1 26 45	1 28 10	1 29 40
8 15	1 19 31	1 20 41	1 21 55	1 23 12	1 24 33	1 25 59
8 30	1 15 48	1 16 55	1 18 05	1 19 18	1 20 35	1 21 57
8 45	1 11 47	1 12 49	1 13 55	1 15 05	1 16 18	1 17 35
9 00	1 07 27	1 08 26	1 09 28	1 10 33	1 11 41	1 12 54
9 15	1 02 51	1 03 45	1 04 43	1 05 43	1 06 47	1 07 54
9 30	0 57 59	0 58 49	0 59 42	1 00 38	1 01 37	1 02 38
9 45	0 52 53	0 53 39	0 54 27	0 55 18	0 56 11	0 57 07
10 00	0 47 34	0 48 15	0 48 58	0 49 44	0 50 32	0 51 22
10 15	0 42 03	0 42 39	0 43 18	0 43 58	0 44 40	0 45 25
10 30	0 36 22	0 36 53	0 37 26	0 38 01	0 38 38	0 39 16
10 45	0 30 32	0 30 58	0 31 26	0 31 55	0 32 26	0 32 58
11 00	0 24 35	0 24 56	0 25 18	0 25 42	0 26 06	0 26 32
11 15	0 18 31	0 18 47	0 19 04	0 19 22	0 19 40	0 20 00
11 30	0 12 23	0 12 34	0 12 45	0 12 57	0 13 09	0 13 23
11 45	0 06 12	0 06 18	0 06 23	0 06 29	0 06 36	0 06 42
Elongation:						
Azimuth...	1 36 36	1 38 03	1 39 35	1 41 11	1 42 53	1 44 40
Hour angle.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
	5 55 52	5 55 43	5 55 34	5 55 24	5 55 14	5 55 04

of Polaris at different hour angles—Continued.

Azimuth of Polaris computed for declination 88° 46'.					Correction for 1' increase in declination of Polaris.		Hour angle before or after upper culmination.
Latitude 46°.	Latitude 47°.	Latitude 48°.	Latitude 49°.	Latitude 50°.	Latitude 40°.	Latitude 50°.	
° ' "	° ' "	° ' "	° ' "	° ' "	"	"	h. m.
0 07 08	0 07 16	0 07 25	0 07 34	0 07 44	— 5	— 6	0 15
0 14 13	0 14 30	0 14 48	0 15 06	0 15 25	—10	—13	0 30
0 21 15	0 21 40	0 22 06	0 22 33	0 23 02	—16	—19	0 45
0 28 11	0 28 44	0 29 18	0 29 55	0 30 33	—21	—25	1 00
0 34 59	0 35 40	0 36 23	0 37 08	0 37 56	—26	—32	1 15
0 41 38	0 42 26	0 43 17	0 44 11	0 45 08	—31	—38	1 30
0 48 05	0 49 01	0 49 59	0 51 02	0 52 07	—36	—43	1 45
0 54 19	0 55 22	0 56 28	0 57 38	0 58 52	—40	—49	2 00
1 00 18	1 01 28	1 02 41	1 03 59	1 05 21	—45	—54	2 15
1 06 01	1 07 17	1 08 38	1 10 03	1 11 32	—49	—59	2 30
1 11 26	1 12 48	1 14 15	1 15 47	1 17 24	—53	—64	2 45
1 16 32	1 18 00	1 19 33	1 21 11	1 22 54	—57	—68	3 00
1 21 17	1 22 50	1 24 29	1 26 13	1 28 02	—60	—72	3 15
1 25 40	1 27 18	1 29 02	1 30 51	1 32 46	—63	—76	3 30
1 29 41	1 31 23	1 33 11	1 35 05	1 37 06	—66	—80	3 45
1 33 17	1 35 03	1 36 55	1 38 54	1 40 59	—69	—83	4 00
1 36 29	1 38 18	1 40 14	1 42 16	1 44 25	—72	—86	4 15
1 39 15	1 41 08	1 43 06	1 45 11	1 47 24	—74	—88	4 30
1 41 35	1 43 30	1 45 31	1 47 39	1 49 54	—75	—90	4 45
1 43 29	1 45 25	1 47 28	1 49 38	1 51 55	—76	—91	5 00
1 44 55	1 46 53	1 48 57	1 51 08	1 53 27	—77	—92	5 15
1 45 54	1 47 53	1 49 58	1 52 10	1 54 30	—78	—93	5 30
1 46 26	1 48 25	1 50 30	1 52 43	1 55 03	—78	—94	5 45
1 46 31	1 48 29	1 50 34	1 52 46	1 55 06	—78	—93	6 00
1 46 08	1 48 05	1 50 10	1 52 21	1 54 40	—78	—93	6 15
1 45 18	1 47 14	1 49 17	1 51 27	1 53 44	—77	—92	6 30
1 44 01	1 45 56	1 47 56	1 50 04	1 52 20	—76	—91	6 45
1 42 18	1 44 10	1 46 09	1 48 14	1 50 27	—75	—89	7 00
1 40 09	1 41 59	1 43 54	1 45 57	1 48 06	—73	—87	7 15
1 37 35	1 39 21	1 41 14	1 43 13	1 45 19	—72	—85	7 30
1 34 36	1 36 19	1 38 08	1 40 03	1 42 05	—69	—82	7 45
1 31 14	1 32 53	1 34 38	1 36 29	1 38 26	—66	—79	8 00
1 27 29	1 29 04	1 30 44	1 32 30	1 34 22	—64	—76	8 15
1 23 23	1 24 53	1 26 28	1 28 09	1 29 55	—61	—72	8 30
1 18 56	1 20 21	1 21 51	1 23 26	1 25 07	—58	—68	8 45
1 14 10	1 15 30	1 16 54	1 18 23	1 19 57	—54	—64	9 00
1 09 05	1 10 19	1 11 38	1 13 01	1 14 28	—50	—59	9 15
1 03 44	1 04 52	1 06 04	1 07 21	1 08 41	—46	—55	9 30
0 58 07	0 59 09	1 00 15	1 01 24	1 02 38	—42	—50	9 45
0 52 16	0 53 12	0 54 11	0 55 13	0 56 19	—38	—45	10 00
0 46 12	0 47 01	0 47 53	0 48 49	0 49 47	—34	—40	10 15
0 39 57	0 40 40	0 41 25	0 42 12	0 43 02	—29	—34	10 30
0 33 32	0 34 08	0 34 46	0 35 26	0 36 08	—24	—29	10 45
0 27 00	0 27 28	0 27 59	0 28 31	0 29 05	—20	—23	11 00
0 20 20	0 20 42	0 21 05	0 21 29	0 21 55	—15	—18	11 15
0 13 36	0 13 51	0 14 06	0 14 22	0 14 39	—10	—12	11 30
0 06 49	0 06 56	0 07 04	0 07 12	0 07 21	— 5	— 6	11 45
1 46 32	1 48 31	1 50 36	1 52 48	1 55 08	—78	—93	
h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	s.	s.	
5 54 53	5 54 42	5 54 31	5 54 20	5 54 07	+ 3	+ 5	





of Polaris at different hour angles—Continued.

Azimuth of Polaris computed for declination 88° 46'.					Correction for 1' increase in declination of Polaris.		Hour angle before or after upper culmination.
Latitude 56°.	Latitude 57°.	Latitude 58°.	Latitude 59°.	Latitude 60°.	Latitude 50°.	Latitude 60°.	
° ' "	° ' "	° ' "	° ' "	° ' "	"	"	h. m.
0 08 56	0 09 12	0 09 28	0 09 45	0 10 03	-- 6	-- 8	0 15
0 17 50	0 18 20	0 18 53	0 19 27	0 20 04	--13	-- 17	0 30
0 26 39	0 27 24	0 28 12	0 29 03	0 29 58	--19	-- 25	0 45
0 35 21	0 36 20	0 37 23	0 38 31	0 39 44	--25	-- 33	1 00
0 43 52	0 45 06	0 46 24	0 47 48	0 49 19	--32	-- 41	1 15
0 52 11	0 53 39	0 55 12	0 56 52	0 58 40	--38	-- 49	1 30
1 00 16	1 01 56	1 03 44	1 05 40	1 07 44	--43	-- 57	1 45
1 08 03	1 09 57	1 11 58	1 14 08	1 16 28	--49	-- 64	2 00
1 15 31	1 17 37	1 19 52	1 22 16	1 24 51	--54	-- 71	2 15
1 22 39	1 24 56	1 27 24	1 30 01	1 32 50	--59	-- 78	2 30
1 29 23	1 31 52	1 34 31	1 37 21	1 40 23	--64	-- 84	2 45
1 35 43	1 38 22	1 41 12	1 44 13	1 47 28	--68	-- 89	3 00
1 41 37	1 44 25	1 47 25	1 50 37	1 54 03	--72	-- 94	3 15
1 47 03	1 50 00	1 53 08	1 56 30	2 00 07	--76	-- 99	3 30
1 52 00	1 55 04	1 58 21	2 01 51	2 05 37	--80	--104	3 45
1 56 26	1 59 37	2 03 01	2 06 40	2 10 34	--83	--108	4 00
2 00 21	2 03 38	2 07 09	2 10 54	2 14 55	--86	--111	4 15
2 03 44	2 07 06	2 10 42	2 14 32	2 18 39	--88	--114	4 30
2 06 34	2 10 00	2 13 40	2 17 35	2 21 47	--90	--116	4 45
2 08 51	2 12 20	2 16 03	2 20 02	2 24 17	--91	--118	5 00
2 10 34	2 14 05	2 17 50	2 21 51	2 26 09	--92	--119	5 15
2 11 42	2 15 14	2 19 01	2 23 04	2 27 23	--93	--120	5 30
2 12 17	2 15 50	2 19 36	2 23 39	2 27 58	--94	--120	5 45
2 12 17	2 15 49	2 19 35	2 23 37	2 27 56	--93	--120	6 00
2 11 44	2 15 14	2 18 59	2 22 59	2 27 15	--93	--119	6 15
2 10 37	2 14 05	2 17 47	2 21 44	2 25 57	--92	--118	6 30
2 08 57	2 12 21	2 16 00	2 19 53	2 24 03	--91	--116	6 45
2 06 44	2 10 05	2 13 39	2 17 27	2 21 32	--89	--114	7 00
2 04 00	2 07 16	2 10 45	2 14 27	2 18 26	--87	--111	7 15
2 00 45	2 03 55	2 07 18	2 10 54	2 14 46	--85	--108	7 30
1 57 00	2 00 04	2 03 20	2 06 49	2 10 32	--82	--104	7 45
1 52 47	1 55 43	1 58 52	2 02 12	2 05 47	--79	--100	8 00
1 48 06	1 50 54	1 53 54	1 57 06	2 00 32	--76	-- 96	8 15
1 42 58	1 45 39	1 48 30	1 51 32	1 54 47	--72	-- 91	8 30
1 37 26	1 39 57	1 42 39	1 45 31	1 48 35	--68	-- 86	8 45
1 31 30	1 33 51	1 36 23	1 39 05	1 41 57	--64	-- 80	9 00
1 25 12	1 27 24	1 29 44	1 32 14	1 34 55	--59	-- 75	9 15
1 18 34	1 20 36	1 22 45	1 25 03	1 27 30	--55	-- 69	9 30
1 11 37	1 13 28	1 15 25	1 17 31	1 19 45	--50	-- 63	9 45
1 04 23	1 06 03	1 07 48	1 09 41	1 11 41	--45	-- 56	10 00
0 56 54	0 58 22	0 59 55	1 01 34	1 03 20	--40	-- 50	10 15
0 49 12	0 50 27	0 51 48	0 53 14	0 54 45	--34	-- 43	10 30
0 41 18	0 42 21	0 43 28	0 44 40	0 45 57	--29	-- 36	10 45
0 33 14	0 34 05	0 34 59	0 35 57	0 36 59	--23	-- 29	11 00
0 25 02	0 25 41	0 26 21	0 27 05	0 27 51	--18	-- 22	11 15
0 16 45	0 17 10	0 17 38	0 18 07	0 18 38	--12	-- 14	11 30
0 08 23	0 08 36	0 08 50	0 09 04	0 09 20	-- 6	-- 7	11 45
2 12 21	2 15 54	2 19 40	2 23 43	2 28 02	--93	--120	
h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.	s.	s.	
5 52 41	5 52 24	5 52 06	5 51 47	5 51 27	+ 5	+ 7	

TABLE 4.—Azimuth and apparent altitude of Polaris at different hour angles—Continued.

Hour angle before or after upper culmi- nation.	Apparent altitude of Polaris, computed for declination 88° 46' and mean refraction.							Correc- tion for 1' in- crease in decli- nation of Po- laris.	Hour angle before or after upper culmi- nation.
	Latitude 30°.	Latitude 35°.	Latitude 40°.	Latitude 45°.	Latitude 50°.	Latitude 55°.	Latitude 60°.		
<i>h. m.</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>° ' "</i>	<i>' "</i>	<i>h. m.</i>
0 00	31 15.6	36 15.3	41 15.1	46 14.9	51 14.8	56 14.6	61 14.5	-1.0	0 00
0 15	31 15.4	36 15.2	41 14.9	46 14.8	51 14.6	56 14.4	61 14.3	-1.0	0 15
0 30	31 14.9	36 14.7	41 14.5	46 14.3	51 14.2	56 14.0	61 13.8	-1.0	0 30
0 45	31 14.2	36 13.9	41 13.7	46 13.5	51 13.3	56 13.2	61 13.0	-1.0	0 45
1 00	31 13.0	35 12.8	41 12.5	46 12.3	51 12.2	56 12.0	61 11.9	-1.0	1 00
1 15	31 11.6	36 11.3	41 11.1	46 10.9	51 10.8	56 10.6	61 10.4	-0.9	1 15
1 30	31 09.9	36 09.6	41 09.4	46 09.2	51 09.0	56 08.8	61 08.6	-0.9	1 30
1 45	31 07.9	36 07.6	41 07.3	46 07.2	51 07.0	56 06.8	61 06.6	-0.9	1 45
2 00	31 05.6	36 05.3	41 05.0	46 04.8	51 04.6	56 04.4	61 04.2	-0.8	2 00
2 15	31 03.0	36 02.7	41 02.4	46 02.2	51 02.0	56 01.8	61 01.6	-0.8	2 15
2 30	31 00.1	35 59.8	40 59.5	45 59.3	50 59.1	55 58.9	60 58.7	-0.8	2 30
2 45	30 57.0	35 56.7	40 56.5	45 56.2	50 56.0	55 55.8	60 55.5	-0.7	2 45
3 00	30 53.7	35 53.4	40 53.1	45 52.9	50 52.6	55 52.3	60 52.1	-0.7	3 00
3 15	30 50.1	35 49.8	40 49.5	45 49.2	50 49.0	55 48.8	60 48.5	-0.6	3 15
3 30	30 46.4	35 46.0	40 45.7	45 45.5	50 45.2	55 45.0	60 44.7	-0.6	3 30
3 45	30 42.4	35 42.1	40 41.8	45 41.5	50 41.3	55 41.0	60 40.7	-0.5	3 45
4 00	30 38.3	35 38.0	40 37.6	45 37.4	50 37.1	55 36.8	60 36.5	-0.5	4 00
4 15	30 34.0	35 33.6	40 33.3	45 33.0	50 32.8	55 32.5	60 32.1	-0.4	4 15
4 30	30 29.6	35 29.2	40 28.9	45 28.5	50 28.3	55 28.0	60 27.6	-0.4	4 30
4 45	30 25.0	35 24.6	40 24.3	45 24.0	50 23.7	55 23.4	60 23.0	-0.3	4 45
5 00	30 20.4	35 20.0	40 19.7	45 19.4	50 19.1	55 18.8	60 18.4	-0.2	5 00
5 15	30 15.6	35 15.3	40 14.9	45 14.6	50 14.3	55 14.0	60 13.6	-0.2	5 15
5 30	30 10.8	35 10.4	40 10.1	45 09.9	50 09.6	55 09.2	60 08.8	-0.1	5 30
5 45	30 06.0	35 05.6	40 05.3	45 05.0	50 04.7	55 04.4	60 04.0	0.0	5 45
6 00	30 01.2	35 00.8	40 00.5	45 00.2	49 59.9	54 59.5	59 59.1	0.0	6 00
6 15	29 56.4	34 56.0	39 55.6	44 55.3	49 55.0	54 54.7	59 54.3	+0.1	6 15
6 30	29 51.6	34 51.2	39 50.8	44 50.5	49 50.2	54 49.9	59 49.6	+0.1	6 30
6 45	29 46.8	34 46.4	39 46.0	44 45.7	49 45.5	54 45.1	59 44.8	+0.2	6 45
7 00	29 42.1	34 41.7	39 41.4	44 41.1	49 40.8	54 40.4	59 40.1	+0.3	7 00
7 15	29 37.5	34 37.1	39 36.8	44 36.4	49 36.2	54 35.8	59 35.4	+0.4	7 15
7 30	29 33.0	34 32.6	39 32.3	44 32.0	49 31.7	54 31.4	59 31.0	+0.4	7 30
7 45	29 28.6	34 28.2	39 27.9	44 27.6	49 27.3	54 27.0	59 26.7	+0.5	7 45
8 00	29 24.4	34 24.0	39 23.7	44 23.4	49 23.1	54 22.8	59 22.5	+0.5	8 00
8 15	29 20.3	34 19.9	39 19.6	44 19.3	49 19.0	54 18.8	59 18.4	+0.6	8 15
8 30	29 16.4	34 16.0	39 15.7	44 15.4	49 15.2	54 14.9	59 14.6	+0.6	8 30
8 45	29 12.7	34 12.3	39 12.0	44 11.7	49 11.5	54 11.2	59 11.0	+0.7	8 45
9 00	29 09.2	34 08.8	39 08.5	44 08.3	49 08.1	54 07.9	59 07.6	+0.7	9 00
9 15	29 05.9	34 05.5	39 05.3	44 05.0	49 04.8	54 04.5	59 04.3	+0.8	9 15
9 30	29 02.8	34 02.5	39 02.2	44 02.0	49 01.8	54 01.5	59 01.3	+0.8	9 30
9 45	29 00.0	33 59.7	38 59.4	43 59.2	48 59.0	53 58.8	58 58.6	+0.8	9 45
10 00	28 57.5	33 57.2	38 56.9	43 56.7	48 56.6	53 56.4	58 56.1	+0.9	10 00
10 15	28 55.3	33 55.0	38 54.7	43 54.5	48 54.3	53 54.1	58 53.9	+0.9	10 15
10 30	28 53.3	33 53.0	38 52.8	43 52.5	48 52.4	53 52.1	58 52.0	+0.9	10 30
10 45	28 51.6	33 51.3	38 51.1	43 50.8	48 50.7	53 50.5	58 50.3	+0.9	10 45
11 00	28 50.2	33 49.9	38 49.7	43 49.5	48 49.4	53 49.1	58 49.0	+1.0	11 00
11 15	28 49.2	33 48.9	38 48.6	43 48.4	48 48.2	53 48.0	58 47.9	+1.0	11 15
11 30	28 48.4	33 48.1	38 47.8	43 47.6	48 47.5	53 47.2	58 47.1	+1.0	11 30
11 45	28 47.9	33 47.6	38 47.4	43 47.1	48 47.0	53 46.8	58 46.7	+1.0	11 45
12 00	28 47.7	33 47.4	38 47.2	43 47.0	48 46.8	53 46.7	58 46.6	+1.0	12 00

TABLE 5.—For projection of maps of large areas.

[The ratio of the yard to the meter as stated by Clarke, namely, 1 meter = 1.093623 yards = 39.370432 inches, is that used in the table.]

LENGTHS OF DEGREES OF THE MERIDIAN.

Latitude.	Meters. <sup>a</sup>	Statute miles.	Latitude.	Meters. <sup>a</sup>	Statute miles.
°			°		
0	110,567.2	68.704	45	111,130.9	69.054
1	110,567.6	68.704	46	111,150.6	69.066
2	110,568.6	68.705	47	111,170.4	69.079
3	110,570.3	68.706	48	111,190.1	69.091
4	110,572.7	68.708	49	111,209.7	69.103
5	110,575.8	68.710	50	111,229.3	69.115
6	110,579.5	68.712	51	111,248.7	69.127
7	110,583.9	68.715	52	111,268.0	69.139
8	110,589.0	68.718	53	111,287.1	69.151
9	110,594.7	68.721	54	111,306.0	69.163
10	110,601.1	68.725	55	111,324.8	69.175
11	110,608.1	68.730	56	111,343.3	69.186
12	110,615.8	68.734	57	111,361.5	69.197
13	110,624.1	68.739	58	111,379.5	69.209
14	110,633.0	68.744	59	111,397.2	69.220
15	110,642.5	68.751	60	111,414.5	69.230
16	110,652.6	68.757	61	111,431.5	69.241
17	110,663.3	68.764	62	111,448.2	69.251
18	110,674.5	68.771	63	111,464.4	69.261
19	110,686.3	68.778	64	111,480.3	69.271
20	110,698.7	68.786	65	111,495.7	69.281
21	110,711.6	68.794	66	111,510.7	69.290
22	110,725.0	68.802	67	111,525.3	69.299
23	110,738.8	68.811	68	111,539.3	69.308
24	110,753.2	68.820	69	111,552.9	69.316
25	110,768.0	68.829	70	111,565.9	69.324
26	110,783.3	68.839	71	111,578.4	69.332
27	110,799.0	68.848	72	111,590.4	69.340
28	110,815.1	68.858	73	111,601.8	69.347
29	110,831.6	68.869	74	111,612.7	69.354
30	110,848.5	68.879	75	111,622.9	69.360
31	110,865.7	68.890	76	111,632.6	69.366
32	110,883.2	68.901	77	111,641.6	69.372
33	110,901.1	68.912	78	111,650.0	69.377
34	110,919.2	68.923	79	111,657.8	69.382
35	110,937.6	68.935	80	111,664.9	69.386
36	110,956.2	68.946	81	111,671.4	69.390
37	110,975.1	68.958	82	111,677.2	69.394
38	110,994.1	68.969	83	111,682.4	69.397
39	111,013.3	68.981	84	111,686.9	69.400
40	111,032.7	68.993	85	111,690.7	69.402
41	111,052.2	69.006	86	111,693.8	69.404
42	111,071.7	69.018	87	111,696.2	69.405
43	111,091.4	69.030	88	111,697.9	69.407
44	111,111.1	69.042	89	111,699.0	69.407
45	111,130.9	69.054	90	111,699.3	69.407

<sup>a</sup>These quantities express the number of meters and statute miles contained within an arc of which the degree of latitude named is the middle; thus, the quantity 111,032.7, opposite latitude 40°, is the number of meters between latitude 39° 30' and latitude 40° 30'.

TABLE 5.—*For projection of maps of large areas—Continued.*

[Extracted from Appendix No. 6, U. S. Coast and Geodetic Survey Report for 1884.]

## LENGTHS OF DEGREES OF THE PARALLEL.

Latitude.	Meters.	Statute miles.	Latitude.	Meters.	Statute miles.
°			°		
0	111,321	69.172	45	78,849	48.995
1	111,304	69.162	46	77,466	48.136
2	111,253	69.130	47	76,058	47.261
3	111,169	69.078	48	74,628	46.372
4	111,051	69.005	49	73,174	45.469
5	110,900	68.911	50	71,698	44.552
6	110,715	68.795	51	70,200	43.621
7	110,497	68.660	52	68,680	42.676
8	110,245	68.504	53	67,140	41.719
9	109,959	68.326	54	65,578	40.749
10	109,641	68.129	55	63,996	39.766
11	109,289	67.910	56	62,395	38.771
12	108,904	67.670	57	60,774	37.764
13	108,486	67.410	58	59,135	36.745
14	108,036	67.131	59	57,478	35.716
15	107,553	66.830	60	55,802	34.674
16	107,036	66.510	61	54,110	33.623
17	106,487	66.169	62	52,400	32.560
18	105,906	65.808	63	50,675	31.488
19	105,294	65.427	64	48,934	30.406
20	104,649	65.026	65	47,177	29.315
21	103,972	64.606	66	45,407	28.215
22	103,264	64.166	67	43,622	27.106
23	102,524	63.706	68	41,823	25.988
24	101,754	63.228	69	40,012	24.862
25	100,952	62.729	70	38,188	23.729
26	100,119	62.212	71	36,353	22.589
27	99,257	61.676	72	34,506	21.441
28	98,364	61.122	73	32,648	20.287
29	97,441	60.548	74	30,781	19.127
30	96,488	59.956	75	28,903	17.960
31	95,506	59.345	76	27,017	16.788
32	94,495	58.716	77	25,123	15.611
33	93,455	58.071	78	23,220	14.428
34	92,387	57.407	79	21,311	13.242
35	91,290	56.725	80	19,394	12.051
36	90,166	56.027	81	17,472	10.857
37	89,014	55.311	82	15,545	9.659
38	87,835	54.579	83	13,612	8.458
39	86,629	53.829	84	11,675	7.255
40	85,396	53.063	85	9,735	6.049
41	84,137	52.281	86	7,792	4.842
42	82,853	51.483	87	5,846	3.632
43	81,543	50.669	88	3,898	2.422
44	80,208	49.840	89	1,949	1.211
45	78,849	48.995	90	0	0.000

TABLE 5.—*For projection of maps of large areas—Continued.*

[Extracted from Appendix No. 6, U. S. Coast and Geodetic Survey Report for 1884.]

## ARCS OF THE PARALLEL IN METERS.

Latitude	Value of 1'	Latitude.	Value of 1'.	Latitude.	Value of 1'.
°   '   "		°   '   "		°   '   "	
24 00	1695.9	33 00	1557.6	42 00	1380.9
10	1693.7	10	1554.7	10	1377.3
20	1691.5	20	1551.7	20	1373.7
30	1689.3	30	1548.7	30	1370.0
40	1687.0	40	1545.8	40	1366.4
50	1684.8	50	1542.8	50	1362.7
25 00	1682.5	34 00	1539.8	43 00	1359.1
10	1680.3	10	1536.8	10	1355.4
20	1678.0	20	1533.7	20	1351.7
30	1675.7	30	1530.7	30	1348.0
40	1673.3	40	1527.6	40	1344.3
50	1671.0	50	1524.6	50	1340.5
26 00	1668.7	35 00	1521.5	44 00	1336.8
10	1666.3	10	1518.4	10	1333.1
20	1663.9	20	1515.3	20	1329.3
30	1661.5	30	1512.2	30	1325.5
40	1659.1	40	1509.1	40	1321.7
50	1656.7	50	1505.9	50	1318.0
27 00	1654.3	36 00	1502.8	45 00	1314.2
10	1651.8	10	1499.6	10	1310.3
20	1649.4	20	1496.4	20	1306.5
30	1646.9	30	1493.2	30	1302.7
40	1644.4	40	1490.0	40	1298.8
50	1641.9	50	1486.8	50	1295.0
28 00	1639.4	37 00	1483.6	46 00	1291.0
10	1636.9	10	1480.3	10	1287.2
20	1634.3	20	1477.1	20	1283.3
30	1631.8	30	1473.8	30	1279.4
40	1629.2	40	1470.5	40	1275.5
50	1626.6	50	1467.2	50	1271.6
29 00	1624.0	38 00	1463.9	47 00	1267.6
10	1621.4	10	1460.6	10	1263.7
20	1618.8	20	1457.3	20	1259.7
30	1616.1	30	1453.9	30	1255.8
40	1613.5	40	1450.6	40	1251.8
50	1610.8	50	1447.2	50	1247.8
30 00	1608.1	39 00	1443.8	48 00	1243.8
10	1605.4	10	1440.4	10	1239.8
20	1602.7	20	1437.0	20	1235.8
30	1600.0	30	1433.6	30	1231.7
40	1597.3	40	1430.2	40	1227.7
50	1594.5	50	1426.7	50	1223.6
31 00	1591.8	40 00	1423.3	49 00	1219.6
10	1589.0	10	1419.8	10	1215.5
20	1586.2	20	1416.3	20	1211.4
30	1583.4	30	1412.8	30	1207.3
40	1580.6	40	1409.3	40	1203.2
50	1577.8	50	1405.8	50	1199.1
32 00	1574.9	41 00	1402.3	50 00	1195.0
10	1572.1	10	1398.8	10	1190.8
20	1569.2	20	1395.2	20	1186.7
30	1566.3	30	1391.6	30	1182.5
40	1563.4	40	1388.1	40	1178.4
50	1560.5	50	1384.5	50	1174.2

TABLE 5.—*For projections of maps of large areas—Continued.*

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 24°.			Latitude 25°.			Latitude 26°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	101,758	861	1 00	100,951	872	1 00	100,118	883
2 00	203,500	1,445	2 00	201,896	1,489	2 00	200,231	1,532
3 00	305,237	3,250	3 00	302,831	3,351	3 00	300,332	3,447
4 00	406,959	5,778	4 00	403,749	5,957	4 00	400,416	6,123
5 00	508,660	9,028	5 00	504,645	9,307	5 00	500,476	9,574
6 00	610,336	13,001	6 00	605,514	13,401	6 00	600,506	13,736
7 00	711,981	17,695	7 00	706,349	18,239	7 00	700,501	18,763
8 00	813,590	23,109	8 00	807,146	23,821	8 00	800,456	24,505
9 00	915,159	29,245	9 00	907,899	30,146	9 00	900,364	31,011
10 00	1,016,681	36,102	10 00	1,008,608	37,215	10 00	1,000,218	38,282
11 00	1,118,152	43,679	11 00	1,109,252	45,026	11 00	1,100,015	46,316
12 00	1,219,566	51,977	12 00	1,209,841	53,578	12 00	1,199,747	55,114
13 00	1,320,919	60,994	13 00	1,310,364	62,873	13 00	1,299,409	64,675
14 00	1,422,205	70,781	14 00	1,410,815	72,909	14 00	1,398,994	74,993
15 00	1,523,420	81,186	15 00	1,511,190	83,685	15 00	1,498,498	86,082
16 00	1,624,558	92,300	16 00	1,611,483	95,202	16 00	1,597,914	97,923
17 00	1,725,614	104,251	17 00	1,711,688	107,458	17 00	1,697,237	110,564
18 00	1,826,583	116,859	18 00	1,811,800	120,453	18 00	1,796,480	123,899
19 00	1,927,460	130,184	19 00	1,911,813	134,186	19 00	1,895,578	138,023
20 00	2,028,240	144,225	20 00	2,011,722	148,656	20 00	1,994,585	152,905
21 00	2,128,918	158,981	21 00	2,111,522	163,862	21 00	2,093,475	168,544
22 00	2,229,488	174,451	22 00	2,211,207	179,805	22 00	2,192,243	184,939
23 00	2,329,946	190,634	23 00	2,310,771	196,482	23 00	2,290,883	202,089
24 00	2,430,287	207,530	24 00	2,410,210	213,894	24 00	2,389,387	219,993
25 00	2,530,505	225,158	25 00	2,509,518	232,038	25 00	2,487,753	238,650
26 00	2,630,596	243,458	26 00	2,608,689	250,914	26 00	2,585,973	258,061
27 00	2,730,554	262,487	27 00	2,707,718	270,521	27 00	2,684,042	278,222
28 00	2,830,374	282,225	28 00	2,806,600	290,859	28 00	2,781,953	299,132
29 00	2,930,052	302,671	29 00	2,905,329	311,925	29 00	2,879,702	320,788
30 00	3,029,582	323,825	30 00	3,003,900	333,718	30 00	2,977,281	343,197



TABLE 5.—For projections of maps of large areas—Continued.

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 27°.			Latitude 28°.			Latitude 29°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	99,256	393	1 00	98,363	403	1 00	97,439	412
2 00	198,505	1,573	2 00	196,719	1,612	2 00	194,872	1,649
3 00	297,742	3,539	3 00	295,062	3,627	3 00	292,291	3,710
4 00	396,960	6,291	4 00	393,385	6,447	4 00	389,689	6,595
5 00	496,154	9,829	5 00	491,682	10,073	5 00	487,059	10,305
6 00	595,316	14,154	6 00	589,945	14,505	6 00	584,394	14,838
7 00	694,440	19,264	7 00	688,168	19,741	7 00	681,687	20,194
8 00	793,522	25,159	8 00	786,347	25,782	8 00	778,931	26,874
9 00	892,554	31,839	9 00	884,472	32,627	9 00	876,120	33,376
10 00	991,529	39,303	10 00	982,537	40,276	10 00	973,246	41,199
11 00	1,090,442	47,551	11 00	1,080,537	48,728	11 00	1,070,302	49,845
12 00	1,189,287	56,583	12 00	1,178,464	57,983	12 00	1,167,282	59,313
13 00	1,288,057	66,398	13 00	1,276,312	68,040	13 00	1,264,178	69,601
14 00	1,386,746	76,995	14 00	1,374,075	78,899	14 00	1,360,983	80,706
15 00	1,485,348	88,374	15 00	1,471,745	90,558	15 00	1,457,691	92,631
16 00	1,583,857	100,534	16 00	1,569,315	103,017	16 00	1,554,295	105,875
17 00	1,682,267	113,474	17 00	1,666,781	116,275	17 00	1,650,787	118,985
18 00	1,780,570	127,193	18 00	1,764,135	130,331	18 00	1,747,161	133,811
19 00	1,878,762	141,690	19 00	1,861,371	145,185	19 00	1,848,410	148,502
20 00	1,976,836	156,966	20 00	1,958,481	160,835	20 00	1,939,527	164,506
21 00	2,074,786	173,018	21 00	2,055,460	177,280	21 00	2,035,505	181,324
22 00	2,172,606	189,845	22 00	2,152,302	194,518	22 00	2,131,338	198,953
23 00	2,270,289	207,447	23 00	2,248,998	212,550	23 00	2,227,020	217,392
24 00	2,367,830	225,823	24 00	2,345,544	231,374	24 00	2,322,539	236,640
25 00	2,465,222	244,970	25 00	2,441,932	250,988	25 00	2,417,893	256,695
26 00	2,562,459	264,889	26 00	2,538,156	271,391	26 00	2,513,074	277,558
27 00	2,659,535	285,577	27 00	2,634,210	292,582	27 00	2,608,075	299,224
28 00	2,756,445	307,035	28 00	2,730,087	314,559	28 00	2,702,890	321,694
29 00	2,853,181	329,259	29 00	2,825,779	337,321	29 00	2,797,511	344,954
30 00	2,949,739	352,249	30 00	2,921,284	360,866	30 00	2,891,931	369,036

TABLE 5.—*For projections of maps of large areas—Continued.*

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 30°.			Latitude 31°.			Latitude 32°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	96,487	421	1 00	96,505	429	1 00	94,494	437
2 00	192,967	1,684	2 00	191,002	1,717	2 00	188,980	1,748
3 00	289,452	3,789	3 00	286,484	3,863	3 00	283,449	3,933
4 00	385,875	6,735	4 00	381,943	6,867	4 00	377,894	6,981
5 00	482,288	10,523	5 00	477,871	10,729	5 00	472,307	10,922
6 00	578,665	15,153	6 00	572,760	15,450	6 00	566,680	15,727
7 00	674,998	20,623	7 00	668,103	21,027	7 00	661,004	21,404
8 00	771,279	26,934	8 00	763,392	27,461	8 00	755,272	27,954
9 00	867,502	34,084	9 00	858,619	34,751	9 00	849,475	35,375
10 00	963,658	42,074	10 00	953,777	42,897	10 00	943,605	43,667
11 00	1,059,741	50,908	11 00	1,048,858	51,898	11 00	1,037,655	52,829
12 00	1,155,744	60,570	12 00	1,143,854	61,753	12 00	1,131,616	62,861
13 00	1,251,658	71,074	13 00	1,238,758	72,462	13 00	1,225,480	73,761
14 00	1,347,477	82,415	14 00	1,333,561	84,024	14 00	1,319,239	85,529
15 00	1,443,193	94,591	15 00	1,428,257	96,437	15 00	1,412,885	98,164
16 00	1,538,800	107,603	16 00	1,522,837	109,701	16 00	1,506,411	111,664
17 00	1,634,290	121,449	17 00	1,617,294	123,815	17 00	1,599,808	126,029
18 00	1,729,654	136,127	18 00	1,711,621	138,777	18 00	1,693,067	141,253
19 00	1,824,887	151,637	19 00	1,805,810	154,586	19 00	1,786,182	157,346
20 00	1,919,982	167,977	20 00	1,899,852	171,241	20 00	1,879,144	174,296
21 00	2,014,930	185,147	21 00	1,993,740	188,741	21 00	1,971,946	192,105
22 00	2,109,725	203,143	22 00	2,087,468	207,065	22 00	2,064,579	210,772
23 00	2,204,359	221,966	23 00	2,181,027	226,270	23 00	2,157,085	230,295
24 00	2,298,825	241,616	24 00	2,274,411	246,295	24 00	2,249,305	250,672
25 00	2,393,116	262,089	25 00	2,367,610	267,159	25 00	2,341,385	271,901
26 00	2,487,224	283,383	26 00	2,460,618	288,860	26 00	2,433,264	293,981
27 00	2,581,144	305,498	27 00	2,553,427	311,396	27 00	2,524,935	316,910
28 00	2,674,867	328,432	28 00	2,646,029	334,765	28 00	2,616,390	340,686
29 00	2,768,385	352,183	29 00	2,738,418	358,966	29 00	2,707,621	365,307
30 00	2,861,694	376,749	30 00	2,830,585	383,997	30 00	2,798,621	390,770

TABLE 5.—For projections of maps of large areas—Continued.  
COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 33°.			Latitude 34°.			Latitude 35°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 0			0 0			0 0		
1 00	58, 424	44, 444	1 00	92, 385	451	1 00	91, 289	457
2 00	186, 809	1, 077	2 00	184, 782	1, 808	2 00	182, 688	1, 828
3 00	280, 826	2, 107	3 00	277, 121	4, 057	3 00	273, 899	4, 112
4 00	373, 781	3, 106	4 00	369, 454	7, 212	4 00	365, 084	7, 310
5 00	467, 150	4, 108	5 00	461, 751	11, 268	5 00	456, 261	11, 421
6 00	560, 428	5, 100	6 00	554, 904	16, 235	6 00	547, 412	16, 445
7 00	653, 704	6, 101	7 00	646, 206	22, 082	7 00	638, 509	22, 881
8 00	746, 922	7, 114	8 00	739, 344	28, 839	8 00	729, 542	29, 239
9 00	840, 072	8, 087	9 00	830, 413	36, 494	9 00	820, 501	36, 967
10 00	933, 148	9, 100	10 00	922, 403	45, 048	10 00	911, 379	45, 656
11 00	1, 026, 186	10, 167	11 00	1, 014, 305	54, 499	11 00	1, 002, 166	55, 234
12 00	1, 119, 086	11, 298	12 00	1, 106, 110	64, 846	12 00	1, 092, 860	65, 721
13 00	1, 211, 639	12, 471	13 00	1, 197, 809	76, 089	13 00	1, 183, 426	77, 116
14 00	1, 304, 515	13, 681	14 00	1, 289, 336	88, 227	14 00	1, 273, 884	89, 415
15 00	1, 397, 058	14, 911	15 00	1, 380, 858	101, 258	15 00	1, 364, 214	102, 619
16 00	1, 489, 608	16, 161	16 00	1, 472, 190	115, 180	16 00	1, 454, 407	113, 748
17 00	1, 581, 684	17, 439	17 00	1, 563, 381	129, 993	17 00	1, 544, 454	124, 738
18 00	1, 673, 986	18, 744	18 00	1, 654, 423	145, 096	18 00	1, 634, 347	147, 650
19 00	1, 766, 011	19, 974	19 00	1, 745, 308	162, 287	19 00	1, 724, 076	164, 480
20 00	1, 857, 808	21, 238	20 00	1, 836, 026	179, 763	20 00	1, 813, 632	182, 168
21 00	1, 949, 028	22, 534	21 00	1, 926, 569	198, 124	21 00	1, 908, 006	200, 772
22 00	2, 041, 009	23, 861	22 00	2, 016, 929	217, 368	22 00	1, 992, 190	220, 258
23 00	2, 132, 867	25, 217	23 00	2, 107, 097	237, 498	23 00	2, 081, 174	240, 657
24 00	2, 223, 381	26, 600	24 00	2, 197, 065	258, 497	24 00	2, 169, 949	261, 986
25 00	2, 314, 448	27, 999	25 00	2, 286, 823	280, 378	25 00	2, 258, 507	284, 102
26 00	2, 405, 176	29, 421	26 00	2, 376, 368	303, 134	26 00	2, 346, 888	307, 154
27 00	2, 496, 050	30, 864	27 00	2, 465, 677	326, 768	27 00	2, 434, 934	331, 069
28 00	2, 586, 881	32, 337	28 00	2, 554, 766	351, 262	28 00	2, 522, 787	355, 905
29 00	2, 678, 007	33, 837	29 00	2, 643, 591	376, 609	29 00	2, 610, 386	381, 568
30 00	2, 769, 812	35, 361	30 00	2, 732, 176	402, 808	30 00	2, 697, 724	408, 166

TABLE 5.—For projections of maps of large areas—Continued.

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y meters.								
Latitude 36°.			Latitude 37°.			Latitude 38°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	90,164	462	1 00	89,012	467	1 00	87,833	472
2 00	180,319	1,850	2 00	178,015	1,879	2 00	175,656	1,898
3 00	270,455	4,162	3 00	266,997	4,207	3 00	263,458	4,247
4 00	360,562	7,399	4 00	355,951	7,479	4 00	351,230	7,549
5 00	450,631	11,560	5 00	444,865	11,685	5 00	438,962	11,795
6 00	540,653	16,645	6 00	533,730	16,824	6 00	526,643	16,963
7 00	630,618	22,652	7 00	622,536	22,896	7 00	614,263	23,112
8 00	720,517	29,583	8 00	711,273	29,901	8 00	701,812	30,183
9 00	810,340	37,435	9 00	799,962	37,838	9 00	789,280	38,195
10 00	900,078	46,209	10 00	888,503	46,706	10 00	876,657	47,145
11 00	989,720	55,903	11 00	976,975	56,508	11 00	963,933	57,034
12 00	1,079,259	66,515	12 00	1,065,340	67,229	12 00	1,051,098	67,800
13 00	1,168,684	78,046	13 00	1,153,567	78,882	13 00	1,138,141	79,622
14 00	1,257,967	90,494	14 00	1,241,707	91,462	14 00	1,226,053	92,319
15 00	1,347,156	103,856	15 00	1,329,690	104,967	15 00	1,311,823	105,949
16 00	1,436,184	118,133	16 00	1,417,526	119,395	16 00	1,398,441	120,511
17 00	1,525,061	133,323	17 00	1,505,206	134,745	17 00	1,484,899	136,002
18 00	1,613,777	149,423	18 00	1,592,721	151,015	18 00	1,571,185	152,421
19 00	1,702,324	166,433	19 00	1,680,059	168,203	19 00	1,657,289	169,767
20 00	1,790,691	184,350	20 00	1,767,211	186,307	20 00	1,743,202	188,087
21 00	1,878,870	203,173	21 00	1,854,169	205,826	21 00	1,826,914	207,229
22 00	1,966,851	222,899	22 00	1,940,922	225,258	22 00	1,914,415	227,341
23 00	2,054,625	243,527	23 00	2,027,462	246,099	23 00	1,999,694	248,370
24 00	2,142,183	265,055	24 00	2,113,777	267,849	24 00	2,084,743	270,315
25 00	2,229,516	287,479	25 00	2,199,860	290,503	25 00	2,169,551	293,172
26 00	2,316,613	310,798	26 00	2,285,699	314,061	26 00	2,254,109	316,939
27 00	2,403,467	335,009	27 00	2,371,287	338,519	27 00	2,338,406	341,613
28 00	2,490,068	360,111	28 00	2,456,612	363,874	28 00	2,422,433	367,192
29 00	2,576,407	386,099	29 00	2,541,667	390,125	29 00	2,506,181	393,672
30 00	2,662,475	412,971	30 00	2,626,441	417,267	30 00	2,589,639	421,050

TABLE 5.—For projections of maps of large areas—Continued.

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 39°.			Latitude 40°.			Latitude 41°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
0 /			0 /			0 /		
1 00	86,627	476	1 00	85,394	479	1 00	84,136	482
2 00	173,243	1,903	2 00	170,778	1,916	2 00	168,260	1,927
3 00	259,859	4,281	3 00	256,140	4,311	3 00	252,863	4,335
4 00	346,403	7,611	4 00	341,470	7,663	4 00	336,432	7,706
5 00	432,925	11,891	5 00	426,757	11,972	5 00	420,457	12,039
6 00	519,396	17,121	6 00	511,990	17,238	6 00	504,428	17,335
7 00	605,808	23,300	7 00	597,158	23,460	7 00	588,832	23,591
8 00	692,138	30,428	8 00	682,252	30,637	8 00	672,159	30,807
9 00	778,388	38,504	9 00	767,260	38,768	9 00	755,897	38,983
10 00	864,545	47,527	10 00	852,171	47,852	10 00	839,587	48,118
11 00	950,598	57,496	11 00	936,975	57,888	11 00	923,067	58,209
12 00	1,036,536	68,409	12 00	1,021,661	68,875	12 00	1,006,475	69,256
13 00	1,122,349	80,266	13 00	1,106,218	80,811	13 00	1,089,752	81,258
14 00	1,208,027	93,064	14 00	1,190,636	93,695	14 00	1,172,886	94,212
15 00	1,293,559	106,802	15 00	1,274,904	107,525	15 00	1,255,866	108,117
16 00	1,378,934	121,479	16 00	1,359,012	122,300	16 00	1,338,681	122,971
17 00	1,464,144	137,093	17 00	1,442,949	138,017	17 00	1,421,321	138,773
18 00	1,549,177	153,642	18 00	1,526,704	154,675	18 00	1,503,775	155,520
19 00	1,634,023	171,124	19 00	1,610,267	172,272	19 00	1,586,031	173,210
20 00	1,718,671	189,537	20 00	1,693,628	190,805	20 00	1,668,079	191,841
21 00	1,803,113	208,878	21 00	1,776,775	210,272	21 00	1,749,909	211,409
22 00	1,887,337	229,146	22 00	1,859,698	230,671	22 00	1,831,509	231,914
23 00	1,971,333	250,337	23 00	1,942,387	251,998	23 00	1,912,869	253,352
24 00	2,055,091	272,450	24 00	2,024,833	274,252	24 00	1,993,978	275,719
25 00	2,138,602	295,481	25 00	2,107,023	297,430	25 00	2,074,826	299,014
26 00	2,221,854	319,429	26 00	2,188,948	321,528	26 00	2,155,402	323,233
27 00	2,304,838	344,289	27 00	2,270,597	346,543	27 00	2,235,695	348,374
28 00	2,387,545	370,059	28 00	2,351,961	372,473	28 00	2,315,695	374,432
29 00	2,469,963	396,736	29 00	2,433,029	399,314	29 00	2,395,392	401,404
30 00	2,552,084	424,317	30 00	2,513,790	427,063	30 00	2,474,774	429,287

TABLE 5.—For projections of maps of large areas—Continued.  
COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 42°.			Latitude 43°.			Latitude 44°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	82,851	484	1 00	81,541	485	1 00	80,208	486
2 00	165,691	1,935	2 00	163,071	1,941	2 00	160,401	1,945
3 00	248,508	4,854	3 00	244,578	4,867	3 00	240,572	4,875
4 00	331,292	7,739	4 00	326,050	7,763	4 00	320,708	7,778
5 00	414,030	12,092	5 00	407,476	12,129	5 00	400,797	12,152
6 00	496,712	17,410	6 00	488,844	17,464	6 00	480,837	17,496
7 00	579,325	23,693	7 00	570,143	23,766	7 00	560,786	23,811
8 00	661,861	30,941	8 00	651,361	31,036	8 00	640,682	31,094
9 00	744,305	39,152	9 00	732,486	39,272	9 00	720,445	39,345
10 00	826,648	48,325	10 00	813,508	48,474	10 00	800,182	48,563
11 00	908,879	58,459	11 00	894,415	58,639	11 00	879,631	58,746
12 00	990,985	69,553	12 00	975,195	69,766	12 00	959,110	69,898
13 00	1,072,956	81,605	13 00	1,055,837	81,854	13 00	1,038,399	81,992
14 00	1,154,781	94,614	14 00	1,136,329	94,901	14 00	1,117,555	95,072
15 00	1,236,449	108,577	15 00	1,216,661	108,905	15 00	1,196,307	109,100
16 00	1,317,948	123,493	16 00	1,296,820	123,864	16 00	1,275,303	124,064
17 00	1,399,267	139,360	17 00	1,376,795	139,777	17 00	1,353,911	139,028
18 00	1,480,395	156,175	18 00	1,456,575	156,640	18 00	1,432,320	156,913
19 00	1,561,321	173,937	19 00	1,536,148	174,451	19 00	1,510,519	174,758
20 00	1,642,035	192,642	20 00	1,615,505	193,209	20 00	1,588,496	193,640
21 00	1,722,524	212,289	21 00	1,694,682	212,909	21 00	1,665,340	213,270
22 00	1,802,779	232,874	22 00	1,773,519	233,551	22 00	1,743,788	233,942
23 00	1,882,788	254,396	23 00	1,852,155	255,129	23 00	1,820,940	255,552
24 00	1,962,540	276,850	24 00	1,930,528	277,642	24 00	1,897,955	278,096
25 00	2,042,024	300,234	25 00	2,008,628	301,087	25 00	1,974,650	301,572
26 00	2,121,230	324,544	26 00	2,086,443	325,459	26 00	2,051,055	325,977
27 00	2,200,146	349,778	27 00	2,163,963	350,750	27 00	2,127,159	351,806
28 00	2,278,762	375,932	28 00	2,241,176	376,974	28 00	2,202,950	377,555
29 00	2,357,067	403,002	29 00	2,318,071	404,109	29 00	2,278,417	404,722
30 00	2,435,052	430,985	30 00	2,394,639	432,157	30 00	2,353,550	432,801

TABLE 5.—*For projections of maps of large areas—Continued.*

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 45°.			Latitude 46°.			Latitude 47°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	78,847	486	1 00	77,464	486	1 00	76,056	485
2 00	157,682	1,946	2 00	154,915	1,945	2 00	152,100	1,942
3 00	236,498	4,378	3 00	232,842	4,376	3 00	228,119	4,368
4 00	315,269	7,788	4 00	309,732	7,779	4 00	304,101	7,765
5 00	393,996	12,160	5 00	387,074	12,153	5 00	380,034	12,131
6 00	472,663	17,508	6 00	464,354	17,498	6 00	455,904	17,467
7 00	551,258	23,826	7 00	541,562	23,813	7 00	531,700	23,770
8 00	629,769	31,114	8 00	618,684	31,096	8 00	607,410	31,040
9 00	708,184	39,370	9 00	695,708	39,347	9 00	683,020	39,276
10 00	786,492	48,594	10 00	772,623	48,565	10 00	758,520	48,477
11 00	864,679	58,782	11 00	849,416	58,747	11 00	833,895	58,640
12 00	942,735	69,936	12 00	926,075	69,893	12 00	909,135	69,765
13 00	1,020,647	82,051	13 00	1,002,588	82,000	13 00	984,227	81,849
14 00	1,098,404	95,127	14 00	1,078,943	95,067	14 00	1,059,158	94,890
15 00	1,175,994	109,162	15 00	1,155,128	109,091	15 00	1,133,917	108,887
16 00	1,253,404	124,153	16 00	1,231,131	124,071	16 00	1,208,491	123,837
17 00	1,330,624	140,099	17 00	1,306,940	140,003	17 00	1,282,868	139,738
18 00	1,407,640	156,996	18 00	1,382,543	156,887	18 00	1,357,036	156,587
19 00	1,484,443	174,842	19 00	1,457,928	174,718	19 00	1,430,964	174,381
20 00	1,561,019	193,635	20 00	1,533,083	193,494	20 00	1,504,697	193,118
21 00	1,637,358	213,371	21 00	1,607,997	213,212	21 00	1,578,166	212,793
22 00	1,713,447	234,048	22 00	1,682,657	233,869	22 00	1,651,377	233,406
23 00	1,789,276	255,663	23 00	1,757,052	255,462	23 00	1,724,320	254,950
24 00	1,864,831	278,211	24 00	1,831,170	277,987	24 00	1,796,982	277,425
25 00	1,940,108	301,690	25 00	1,904,999	301,441	25 00	1,869,851	300,824
26 00	2,015,079	326,097	26 00	1,978,528	325,820	26 00	1,941,415	325,146
27 00	2,089,749	351,427	27 00	2,051,745	351,120	27 00	2,013,163	350,386
28 00	2,164,100	377,676	28 00	2,124,639	377,837	28 00	2,084,583	376,539
29 00	2,238,121	404,841	29 00	2,197,197	404,468	29 00	2,155,663	403,602
30 00	2,311,802	432,918	30 00	2,269,410	432,507	30 00	2,226,392	431,569



TABLE 5.—For projections of maps of large areas—Continued.

COORDINATES OF CURVATURE.

Natural scale.—Values of X and Y in meters.								
Latitude 48°.			Latitude 49°.			Latitude 50°.		
Longi- tude.	X	Y	Longi- tude.	X	Y	Longi- tude.	X	Y
° /			° /			° /		
1 00	74,626	484	1 00	73,172	482	1 00	71,696	479
2 00	149,239	1,936	2 00	146,331	1,928	2 00	143,379	1,917
3 00	223,827	4,355	3 00	219,465	4,337	3 00	215,037	4,313
4 00	298,377	7,742	4 00	292,561	7,709	4 00	286,656	7,667
5 00	372,877	12,095	5 00	365,606	12,044	5 00	358,224	11,978
6 00	447,314	17,414	6 00	438,588	17,340	6 00	429,727	17,246
7 00	521,677	23,698	7 00	511,493	23,598	7 00	501,154	23,469
8 00	595,951	30,946	8 00	584,310	30,815	8 00	572,492	30,646
9 00	670,125	39,157	9 00	657,026	38,991	9 00	643,727	38,777
10 00	744,186	48,329	10 00	729,627	48,123	10 00	714,847	47,859
11 00	818,123	58,461	11 00	802,102	58,212	11 00	785,839	57,891
12 00	891,921	69,552	12 00	874,438	69,254	12 00	856,691	68,872
13 00	965,570	81,598	13 00	946,622	81,248	13 00	927,389	80,798
14 00	1,039,056	94,598	14 00	1,018,642	94,191	14 00	997,922	93,669
15 00	1,112,367	108,551	15 00	1,090,485	108,082	15 00	1,068,277	107,482
16 00	1,185,491	123,453	16 00	1,162,138	122,918	16 00	1,138,440	122,234
17 00	1,258,416	139,302	17 00	1,233,591	138,697	17 00	1,208,400	137,923
18 00	1,331,129	156,096	18 00	1,304,829	155,416	18 00	1,278,144	154,546
19 00	1,403,618	173,832	19 00	1,375,840	173,071	19 00	1,347,660	172,099
20 00	1,475,871	192,506	20 00	1,446,613	191,660	20 00	1,416,934	190,581
21 00	1,547,876	212,116	21 00	1,517,135	211,180	21 00	1,485,956	209,987
22 00	1,619,620	232,658	22 00	1,587,394	231,627	22 00	1,554,711	230,314
23 00	1,691,091	254,128	23 00	1,657,378	252,998	23 00	1,623,189	251,559
24 00	1,762,279	276,524	24 00	1,727,073	275,288	24 00	1,691,877	273,717
25 00	1,833,170	299,842	25 00	1,796,470	298,495	25 00	1,759,262	296,785
26 00	1,903,752	324,077	26 00	1,865,554	322,614	26 00	1,826,833	320,758
27 00	1,974,015	349,225	27 00	1,934,315	347,640	27 00	1,894,077	345,633
28 00	2,043,945	375,283	28 00	2,002,740	373,570	28 00	1,960,983	371,404
29 00	2,113,531	402,245	29 00	2,070,817	400,399	29 00	2,027,538	398,068
30 00	2,182,762	430,107	30 00	2,138,536	428,123	30 00	2,093,731	425,619

TABLE 6.—Coordinates for projection of maps (scale  $\frac{1}{111,860}$ ).

[From Smithsonian Geographical Tables.]

Latitude of parallel	Meridional distances from even degree parallels	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longitude.	10' longitude.	15' longitude.	20' longitude.	25' longitude.	30' longitude.			
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longitude interval.	0°	1°
0 00	.....	2.922	5.844	8.765	11.687	14.609	17.531			
10	5.804	2.922	5.843	8.765	11.687	14.608	17.530			
20	11.608	2.922	5.843	8.765	11.686	14.608	17.530			
30	17.412	2.922	5.843	8.765	11.686	14.608	17.530			
40	23.216	2.922	5.843	8.764	11.686	14.608	17.529			
50	29.020	2.921	5.843	8.764	11.686	14.607	17.528			
1 00	.....	2.921	5.843	8.764	11.685	14.606	17.528	5	0.000	0.000
10	5.840	2.921	5.842	8.763	11.684	14.606	17.527	10	.000	.000
20	11.608	2.921	5.842	8.763	11.684	14.604	17.525	15	.000	.000
30	17.412	2.921	5.841	8.762	11.683	14.604	17.524	20	.000	.001
40	23.216	2.920	5.841	8.761	11.682	14.602	17.522	25	.000	.001
50	29.020	2.920	5.840	8.761	11.681	14.601	17.521	30	.000	.001
2 00	.....	2.920	5.840	8.760	11.680	14.600	17.520		2°	3°
10	5.804	2.920	5.839	8.759	11.678	14.598	17.518			
20	11.608	2.919	5.839	8.758	11.677	14.598	17.516			
30	17.412	2.919	5.838	8.757	11.676	14.594	17.513			
40	23.216	2.918	5.837	8.756	11.674	14.592	17.511	5	0.000	0.000
50	29.020	2.918	5.836	8.755	11.673	14.591	17.509	10	.000	.000
3 00	.....	2.918	5.836	8.753	11.671	14.589	17.507	15	.001	.001
10	5.804	2.917	5.835	8.752	11.669	14.586	17.504	20	.001	.002
20	11.608	2.917	5.834	8.750	11.667	14.584	17.501	25	.002	.003
30	17.412	2.916	5.832	8.749	11.665	14.581	17.497	30	.003	.004
40	23.217	2.916	5.831	8.747	11.663	14.578	17.494		4°	5°
50	29.021	2.916	5.830	8.746	11.661	14.576	17.491			
4 00	.....	2.915	5.829	8.744	11.659	14.574	17.488			
10	5.804	2.914	5.828	8.742	11.656	14.570	17.484	5	0.000	0.000
20	11.609	2.913	5.827	8.740	11.654	14.567	17.480	10	.001	.001
30	17.413	2.913	5.825	8.738	11.651	14.564	17.476	15	.001	.002
40	23.217	2.912	5.824	8.736	11.648	14.560	17.473	20	.002	.003
50	29.022	2.911	5.823	8.734	11.646	14.557	17.468	25	.004	.005
5 00	.....	2.911	5.822	8.732	11.643	14.554	17.465	30	.005	.007
10	5.804	2.910	5.820	8.730	11.640	14.550	17.459		6°	7°
20	11.609	2.909	5.818	8.727	11.636	14.546	17.455			
30	17.414	2.908	5.817	8.725	11.633	14.542	17.450			
40	23.218	2.908	5.815	8.722	11.630	14.538	17.445			
50	29.022	2.907	5.813	8.720	11.627	14.534	17.440			
6 00	.....	2.906	5.812	8.718	11.624	14.530	17.435	5	0.000	0.000
10	5.805	2.905	5.810	8.715	11.620	14.524	17.429	10	.001	.001
20	11.609	2.904	5.808	8.712	11.616	14.520	17.424	15	.002	.002
30	17.414	2.903	5.806	8.709	11.612	14.515	17.418	20	.004	.004
40	23.219	2.902	5.804	8.706	11.608	14.510	17.413	25	.005	.006
50	29.024	2.901	5.802	8.703	11.604	14.506	17.407	30	.008	.009
7 00	.....	2.900	5.800	8.701	11.601	14.501	17.401		8°	
10	5.805	2.899	5.798	8.697	11.596	14.496	17.395	5	0.000	
20	11.610	2.898	5.796	8.694	11.592	14.490	17.387	10	.001	
30	17.415	2.897	5.794	8.690	11.587	14.484	17.381	15	.003	
40	23.220	2.896	5.791	8.687	11.583	14.478	17.374	20	.005	
50	29.025	2.895	5.789	8.684	11.578	14.473	17.368	25	.007	
8 00	.....	2.894	5.787	8.680	11.574	14.468	17.361	30	.010	

TABLE 6.—Coordinates for projection of maps (scale 1:250,000)—Continued.  
[From Smithsonian Geographical Tables.]

Latitude of parallel	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	5°	10°
8 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.		Inches.	Inches.
10	5.806	2.894	5.787	8.680	11.574	14.468	17.361	5	0.000	0.000
20	11.610	2.892	5.784	8.677	11.569	14.461	17.353	10	.001	.001
30	17.416	2.891	5.782	8.673	11.564	14.455	17.346	15	.003	.003
40	23.221	2.890	5.779	8.669	11.559	14.448	17.338	20	.005	.005
50	29.026	2.888	5.777	8.666	11.554	14.442	17.331	25	.007	.006
		2.887	5.775	8.662	11.549	14.436	17.324	30	.010	.012
9 00		2.886	5.772	8.658	11.544	14.430	17.317			
10	5.806	2.885	5.769	8.654	11.539	14.424	17.306	5	0.000	0.000
20	11.611	2.883	5.767	8.650	11.533	14.416	17.300	10	.001	.001
30	17.417	2.882	5.764	8.646	11.528	14.410	17.291	15	.003	.003
40	23.223	2.881	5.761	8.642	11.522	14.402	17.283	20	.005	.005
50	29.028	2.879	5.758	8.637	11.516	14.396	17.275	25	.007	.006
								30	.010	.012
10 00		2.878	5.755	8.633	11.511	14.388	17.266			
10	5.806	2.876	5.752	8.628	11.504	14.380	17.257	5	0.000	0.000
20	11.612	2.875	5.749	8.624	11.498	14.373	17.248	10	.001	.001
30	17.417	2.873	5.746	8.619	11.492	14.366	17.239	15	.003	.003
40	23.223	2.872	5.743	8.614	11.486	14.358	17.229	20	.005	.005
50	29.029	2.870	5.740	8.610	11.480	14.350	17.220	25	.007	.006
								30	.010	.012
11 00		2.869	5.737	8.606	11.474	14.342	17.211			
10	5.806	2.867	5.734	8.601	11.468	14.334	17.201	5	0.000	0.000
20	11.612	2.865	5.730	8.596	11.461	14.326	17.191	10	.001	.001
30	17.419	2.864	5.727	8.590	11.454	14.318	17.181	15	.003	.003
40	23.225	2.862	5.724	8.585	11.447	14.309	17.171	20	.005	.005
50	29.031	2.860	5.720	8.580	11.440	14.300	17.161	25	.007	.006
								30	.010	.012
12 00		2.858	5.717	8.575	11.434	14.292	17.150			
10	5.807	2.857	5.713	8.570	11.428	14.282	17.139	5	0.000	0.000
20	11.613	2.855	5.709	8.564	11.419	14.274	17.129	10	.001	.001
30	17.420	2.853	5.706	8.559	11.412	14.264	17.117	15	.003	.003
40	23.225	2.851	5.702	8.553	11.404	14.256	17.107	20	.005	.005
50	29.033	2.849	5.698	8.548	11.397	14.246	17.096	25	.007	.006
								30	.010	.012
13 00		2.847	5.695	8.542	11.390	14.237	17.084			
10	5.807	2.846	5.691	8.536	11.382	14.228	17.073	5	0.000	0.000
20	11.614	2.844	5.687	8.530	11.374	14.218	17.061	10	.001	.001
30	17.421	2.842	5.683	8.524	11.366	14.208	17.049	15	.003	.003
40	23.228	2.840	5.679	8.519	11.358	14.198	17.038	20	.005	.005
50	29.035	2.838	5.675	8.513	11.350	14.188	17.026	25	.007	.006
								30	.010	.012
14 00		2.837	5.671	8.507	11.342	14.178	17.014			
10	5.808	2.834	5.667	8.500	11.334	14.168	17.001	5	0.000	0.000
20	11.615	2.831	5.663	8.494	11.326	14.157	16.988	10	.001	.001
30	17.422	2.829	5.658	8.488	11.317	14.146	16.975	15	.003	.003
40	23.230	2.827	5.654	8.481	11.308	14.136	16.963	20	.005	.005
50	29.038	2.825	5.650	8.475	11.300	14.125	16.950	25	.007	.006
								30	.010	.012
15 00		2.823	5.646	8.469	11.292	14.114	16.937			
10	5.808	2.821	5.641	8.462	11.282	14.103	16.924	5	0.000	0.000
20	11.616	2.818	5.637	8.455	11.274	14.092	16.910	10	.001	.001
30	17.424	2.816	5.632	8.448	11.264	14.080	16.897	15	.003	.003
40	23.232	2.814	5.628	8.441	11.255	14.069	16.883	20	.005	.005
50	29.040	2.812	5.623	8.435	11.246	14.058	16.870	25	.007	.006
								30	.010	.012
16 00		2.809	5.619	8.428	11.237	14.046	16.856			

TABLE 6.—Coordinates for projection of maps (scale 1:111,111)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abacisms of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	16°	17°
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
16 00	.....	2.809	5.619	8.428	11.237	14.046	16.856			
10	5.809	2.807	5.614	8.421	11.228	14.034	16.841			
20	11.617	2.804	5.609	8.414	11.218	14.022	16.827			
30	17.426	2.802	5.604	8.406	11.206	14.010	16.813			
40	23.234	2.800	5.599	8.399	11.199	13.998	16.798			
50	29.043	2.797	5.595	8.392	11.189	13.986	16.784			
17 00	.....	2.795	5.590	8.385	11.180	13.974	16.769			
10	5.809	2.792	5.585	8.377	11.170	13.962	16.754	5	0.001	0.001
20	11.618	2.790	5.580	8.369	11.159	13.949	16.739	10	.002	.002
30	17.427	2.787	5.575	8.362	11.149	13.936	16.724	15	.006	.006
40	23.236	2.785	5.570	8.354	11.139	13.924	16.709	20	.009	.010
50	29.046	2.782	5.564	8.347	11.129	13.911	16.693	25	.014	.016
								30	.020	.021
18 00	.....	2.780	5.559	8.339	11.119	13.898	16.678			
10	5.810	2.777	5.554	8.331	11.108	13.885	16.662		18°	19°
20	11.619	2.774	5.549	8.323	11.097	13.872	16.646			
30	17.429	2.772	5.543	8.315	11.087	13.859	16.630			
40	23.239	2.769	5.538	8.307	11.076	13.845	16.614	5	0.001	0.001
50	29.049	2.766	5.533	8.299	11.065	13.832	16.598	10	.002	.003
								15	.006	.006
19 00	.....	2.764	5.527	8.291	11.054	13.818	16.582	20	.010	.010
10	5.810	2.761	5.522	8.282	11.043	13.804	16.565	25	.016	.016
20	11.621	2.758	5.516	8.274	11.032	13.790	16.548	30	.022	.024
30	17.431	2.755	5.510	8.266	11.021	13.776	16.531			
40	23.242	2.752	5.505	8.257	11.009	13.762	16.514		20°	21°
50	29.052	2.750	5.499	8.249	10.998	13.748	16.497			
20 00	.....	2.747	5.493	8.240	10.987	13.734	16.480			
10	5.811	2.743	5.487	8.231	10.975	13.719	16.462	5	0.001	0.001
20	11.622	2.741	5.482	8.223	10.963	13.704	16.445	10	.003	.003
30	17.433	2.738	5.476	8.213	10.951	13.689	16.427	15	.006	.006
40	23.244	2.735	5.470	8.204	10.939	13.674	16.409	20	.011	.011
50	29.055	2.732	5.464	8.196	10.928	13.659	16.391	25	.017	.018
								30	.025	.026
21 00	.....	2.729	5.458	8.187	10.916	13.645	16.373			
10	5.812	2.726	5.452	8.177	10.903	13.629	16.355			
20	11.623	2.723	5.445	8.168	10.891	13.614	16.336		22°	23°
30	17.435	2.720	5.439	8.159	10.878	13.598	16.318			
40	23.247	2.717	5.433	8.150	10.866	13.583	16.300			
50	29.058	2.714	5.427	8.141	10.854	13.568	16.281	5	0.001	0.001
								10	.003	.003
22 00	.....	2.710	5.421	8.131	10.842	13.552	16.262	15	.007	.007
10	5.812	2.707	5.414	8.122	10.829	13.536	16.243	20	.012	.012
20	11.625	2.704	5.408	8.112	10.816	13.520	16.223	25	.018	.019
30	17.437	2.701	5.401	8.102	10.802	13.503	16.204	30	.027	.028
40	23.250	2.697	5.395	8.092	10.790	13.487	16.184			
50	29.062	2.694	5.388	8.083	10.777	13.471	16.165		24°	
23 00	.....	2.691	5.382	8.073	10.764	13.455	16.145			
10	5.813	2.688	5.375	8.063	10.750	13.438	16.125			
20	11.626	2.684	5.368	8.053	10.737	13.421	16.105	5	0.001	
30	17.439	2.681	5.362	8.042	10.723	13.404	16.085	10	.003	
40	23.252	2.677	5.355	8.032	10.710	13.387	16.064	15	.007	
50	29.066	2.674	5.348	8.022	10.696	13.371	16.045	20	.013	
								25	.020	
24 00	.....	2.671	5.341	8.012	10.683	13.354	16.024	30	.028	

TABLE 6.—Coordinates for projection of maps (scale 1:111,500)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
24 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	24°	25°
10	5.814	2.571	5.341	8.012	10.683	13.354	16.024			
20	11.628	2.567	5.334	8.002	10.669	13.336	16.008			
30	17.442	2.564	5.327	7.991	10.655	13.319	15.982			
40	23.256	2.560	5.320	7.981	10.641	13.301	15.961			
50	29.069	2.557	5.313	7.970	10.627	13.284	15.940			
60	29.069	2.553	5.306	7.960	10.613	13.266	15.919	5 10 15 20 25 30	Inches. 0.001 .006 .007 .013 .020 .028	Inches. 0.001 .008 .007 .013 .020 .029
25 00		2.550	5.299	7.949	10.599	13.249	15.898			
10	5.815	2.546	5.292	7.938	10.584	13.231	15.877			
20	11.629	2.542	5.285	7.927	10.570	13.212	15.854			
30	17.444	2.539	5.278	7.916	10.555	13.194	15.833			
40	23.259	2.535	5.270	7.905	10.540	13.176	15.811			
50	29.074	2.531	5.263	7.894	10.526	13.157	15.788			
60	29.074	2.528	5.256	7.883	10.511	13.139	15.767	5 10 15 20 25 30	26°	27°
26 00		2.524	5.248	7.872	10.496	13.120	15.744			
10	5.816	2.520	5.240	7.861	10.481	13.101	15.721			
20	11.631	2.516	5.233	7.849	10.466	13.082	15.698			
30	17.446	2.513	5.225	7.838	10.451	13.063	15.676			
40	23.262	2.509	5.218	7.827	10.436	13.045	15.654			
50	29.077	2.506	5.210	7.816	10.421	13.026	15.631	5 10 15 20 25 30	28°	29°
27 00		2.501	5.208	7.804	10.406	13.008	15.608			
10	5.816	2.497	5.195	7.792	10.390	12.987	15.584			
20	11.633	2.493	5.187	7.780	10.374	12.967	15.560			
30	17.449	2.489	5.179	7.768	10.358	12.947	15.537			
40	23.265	2.486	5.171	7.757	10.342	12.928	15.514			
50	29.082	2.482	5.163	7.745	10.327	12.909	15.490	5 10 15 20 25 30	30°	31°
28 00		2.478	5.155	7.733	10.311	12.889	15.466			
10	5.817	2.474	5.147	7.721	10.294	12.868	15.442			
20	11.634	2.470	5.139	7.709	10.278	12.848	15.418			
30	17.451	2.466	5.131	7.697	10.262	12.828	15.394			
40	23.268	2.462	5.123	7.685	10.246	12.808	15.369			
50	29.088	2.458	5.115	7.673	10.230	12.788	15.345	5 10 15 20 25 30	32°	33°
29 00		2.453	5.107	7.660	10.213	12.767	15.320			
10	5.818	2.449	5.099	7.648	10.197	12.746	15.296			
20	11.636	2.445	5.090	7.635	10.180	12.725	15.270			
30	17.454	2.441	5.082	7.622	10.163	12.704	15.245			
40	23.272	2.437	5.073	7.610	10.146	12.683	15.220			
50	29.090	2.433	5.065	7.598	10.130	12.662	15.195	5 10 15 20 25 30	34°	35°
30 00		2.428	5.056	7.585	10.113	12.641	15.169			
10	5.819	2.424	5.048	7.572	10.096	12.620	15.143			
20	11.638	2.420	5.039	7.559	10.078	12.598	15.118			
30	17.457	2.415	5.031	7.546	10.061	12.577	15.092			
40	23.276	2.411	5.022	7.533	10.044	12.555	15.066			
50	29.094	2.407	5.014	7.520	10.027	12.534	15.040	5 10 15 20 25 30	36°	37°
31 00		2.402	5.006	7.507	10.009	12.512	15.014			
10	5.820	2.398	4.996	7.494	9.992	12.490	14.987			
20	11.640	2.393	4.987	7.480	9.974	12.467	14.960			
30	17.460	2.389	4.978	7.467	9.956	12.445	14.934			
40	23.280	2.385	4.969	7.454	9.938	12.423	14.908			
50	29.100	2.381	4.960	7.441	9.921	12.401	14.881			
32 00		2.376	4.951	7.428	9.903	12.379	14.855	5 10 15 20 25 30	38°	39°
10	5.821	2.372	4.942	7.415	9.885	12.357	14.829			
20	11.642	2.368	4.933	7.402	9.867	12.335	14.803			
30	17.462	2.364	4.924	7.389	9.849	12.313	14.777			
40	23.282	2.360	4.915	7.376	9.831	12.291	14.751			
50	29.102	2.356	4.906	7.363	9.813	12.269	14.725			

TABLE 6.—Coordinates for projection of maps (scale 1:150,000)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	32°	33°
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
32 00	.....	2.480	4.960	7.441	9.921	12.401	14.881	5 10 15 20 25 30	Inches. 0.001 0.004 0.009 0.016 0.024 0.034	Inches. 0.001 0.004 0.009 0.016 0.024 0.035
10	5.821	2.476	4.951	7.427	9.903	12.379	14.854			
20	11.642	2.471	4.942	7.413	9.884	12.355	14.827			
30	17.463	2.467	4.933	7.400	9.866	12.333	14.800			
40	23.283	2.462	4.924	7.386	9.848	12.310	14.772			
50	29.104	2.458	4.915	7.373	9.830	12.288	14.745			
33 00	.....	2.453	4.906	7.359	9.812	12.265	14.717	5 10 15 20 25 30	Inches. 0.001 0.004 0.009 0.016 0.024 0.034	Inches. 0.001 0.004 0.009 0.016 0.024 0.035
10	5.822	2.448	4.896	7.345	9.793	12.241	14.689			
20	11.643	2.444	4.887	7.331	9.774	12.218	14.661			
30	17.465	2.439	4.878	7.316	9.755	12.194	14.633			
40	23.287	2.434	4.868	7.302	9.736	12.171	14.606			
50	29.109	2.429	4.859	7.288	9.718	12.147	14.578			
34 00	.....	2.425	4.850	7.274	9.699	12.124	14.549	5 10 15 20 25 30	34°	35°
10	5.823	2.420	4.840	7.260	9.680	12.100	14.520			
20	11.645	2.415	4.830	7.245	9.661	12.076	14.491			
30	17.468	2.410	4.821	7.231	9.642	12.052	14.462			
40	23.291	2.406	4.811	7.217	9.622	12.028	14.434			
50	29.113	2.401	4.802	7.203	9.604	12.004	14.406			
35 00	.....	2.396	4.792	7.188	9.584	11.980	14.376	5 10 15 20 25 30	0.001 0.004 0.009 0.016 0.025 0.035	0.001 0.004 0.009 0.016 0.025 0.036
10	5.824	2.391	4.782	7.174	9.565	11.956	14.347			
20	11.647	2.386	4.773	7.159	9.545	11.932	14.318			
30	17.471	2.381	4.763	7.144	9.526	11.907	14.288			
40	23.294	2.377	4.753	7.130	9.506	11.883	14.259			
50	29.115	2.372	4.743	7.115	9.486	11.858	14.230			
36 00	.....	2.367	4.733	7.099	9.466	11.833	14.200	5 10 15 20 25 30	36°	37°
10	5.824	2.362	4.723	7.085	9.446	11.808	14.170			
20	11.649	2.357	4.713	7.070	9.426	11.783	14.139			
30	17.473	2.351	4.703	7.055	9.406	11.757	14.109			
40	23.297	2.346	4.693	7.039	9.386	11.732	14.078			
50	29.122	2.341	4.683	7.024	9.366	11.707	14.048			
37 00	.....	2.336	4.673	7.009	9.345	11.682	14.018	5 10 15 20 25 30	0.001 0.004 0.009 0.017 0.026 0.037	0.001 0.004 0.009 0.017 0.026 0.037
10	5.825	2.331	4.662	6.994	9.325	11.656	13.987			
20	11.651	2.326	4.652	6.978	9.304	11.630	13.956			
30	17.477	2.321	4.642	6.963	9.284	11.606	13.925			
40	23.302	2.316	4.631	6.947	9.263	11.579	13.894			
50	29.128	2.311	4.621	6.932	9.242	11.553	13.864			
38 00	.....	2.306	4.611	6.916	9.222	11.527	13.832	5 10 15 20 25 30	38°	39°
10	5.827	2.300	4.600	6.900	9.200	11.501	13.801			
20	11.653	2.295	4.590	6.884	9.179	11.474	13.769			
30	17.480	2.290	4.579	6.869	9.158	11.448	13.737			
40	23.306	2.284	4.568	6.853	9.137	11.421	13.705			
50	29.133	2.279	4.558	6.837	9.116	11.395	13.673			
39 00	.....	2.274	4.548	6.821	9.096	11.369	13.642	5 10 15 20 25 30	40°	
10	5.828	2.268	4.537	6.805	9.073	11.342	13.610			
20	11.655	2.263	4.526	6.789	9.052	11.315	13.577			
30	17.483	2.258	4.515	6.773	9.030	11.288	13.545			
40	23.310	2.252	4.504	6.756	9.008	11.261	13.513			
50	29.138	2.247	4.493	6.740	8.987	11.234	13.480			
40 00	.....	2.241	4.483	6.724	8.965	11.207	13.448	5	0.001	

TABLE 6.—Coordinates for projection of maps (scale  $\frac{1}{1135000}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi-tude.	10' longi-tude.	15' longi-tude.	20' longi-tude.	25' longi-tude.	30' longi-tude.			
° ' Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi-tude inter-val.	40°	41°
40 00	.....	2.241	4.483	6.724	8.965	11.207	13.448			
10	5.829	2.236	4.472	6.707	8.943	11.179	13.415			
20	11.657	2.230	4.461	6.691	8.921	11.152	13.382			
30	17.486	2.225	4.450	6.674	8.899	11.124	13.349			
40	23.314	2.219	4.439	6.656	8.877	11.097	13.316			
50	29.143	2.214	4.428	6.641	8.855	11.069	13.283			
41 00	.....	2.208	4.417	6.625	8.834	11.042	13.250	5	Inches. 0.001	Inches. 0.001
10	5.830	2.203	4.406	6.608	8.811	11.014	13.217	10	.004	.004
20	11.659	2.197	4.394	6.591	8.788	10.985	13.183	15	.009	.009
30	17.489	2.192	4.383	6.575	8.766	10.958	13.149	20	.017	.017
40	23.319	2.186	4.372	6.558	8.744	10.929	13.115	25	.026	.026
50	29.149	2.180	4.360	6.541	8.721	10.901	13.081	30	.038	.038
42 00	.....	2.175	4.349	6.524	8.698	10.873	13.048		42°	43°
10	5.831	2.169	4.338	6.507	8.676	10.844	13.013			
20	11.661	2.163	4.326	6.490	8.653	10.816	12.979			
30	17.492	2.157	4.315	6.472	8.630	10.787	12.945	5	0.001	0.001
40	23.323	2.152	4.303	6.455	8.607	10.759	12.910	10	.004	.004
50	29.154	2.146	4.292	6.438	8.584	10.730	12.876	15	.010	.010
43 00	.....	2.140	4.281	6.421	8.561	10.702	12.842	20	.017	.017
10	5.832	2.135	4.269	6.403	8.538	10.672	12.807	25	.026	.027
20	11.663	2.129	4.257	6.386	8.514	10.643	12.772	30	.038	.038
30	17.495	2.123	4.246	6.368	8.491	10.614	12.737		44°	45°
40	23.327	2.117	4.234	6.351	8.468	10.585	12.701			
50	29.159	2.111	4.222	6.333	8.444	10.556	12.667			
44 00	.....	2.105	4.210	6.316	8.421	10.526	12.631	5	0.001	0.001
10	5.833	2.099	4.199	6.298	8.397	10.496	12.596	10	.004	.004
20	11.666	2.093	4.187	6.280	8.373	10.467	12.560	15	.010	.010
30	17.498	2.087	4.175	6.262	8.350	10.437	12.524	20	.017	.017
40	23.331	2.081	4.163	6.244	8.326	10.407	12.489	25	.027	.027
50	29.164	2.076	4.151	6.227	8.302	10.378	12.453	30	.038	.038
45 00	.....	2.070	4.139	6.209	8.278	10.348	12.417		46°	47°
10	5.834	2.064	4.127	6.191	8.254	10.317	12.381			
20	11.668	2.057	4.115	6.172	8.230	10.288	12.345			
30	17.501	2.051	4.103	6.154	8.206	10.257	12.308	5	0.001	0.001
40	23.335	2.045	4.091	6.136	8.181	10.226	12.272	10	.004	.004
50	29.169	2.039	4.079	6.118	8.157	10.197	12.236	15	.010	.010
46 00	.....	2.033	4.067	6.100	8.133	10.166	12.199	20	.017	.017
10	5.835	2.027	4.054	6.081	8.108	10.136	12.163	25	.027	.027
20	11.670	2.021	4.042	6.063	8.084	10.104	12.125	30	.038	.038
30	17.504	2.015	4.030	6.044	8.059	10.074	12.089		48°	
40	23.339	2.009	4.017	6.026	8.034	10.043	12.052			
50	29.174	2.003	4.005	6.008	8.010	10.013	12.015			
47 00	.....	1.996	3.992	5.989	7.985	9.981	11.978	5	0.001	
10	5.836	1.990	3.980	5.970	7.960	9.951	11.941	10	.004	
20	11.672	1.984	3.968	5.951	7.935	9.919	11.903	15	.010	
30	17.508	1.978	3.955	5.933	7.910	9.888	11.866	20	.017	
40	23.344	1.971	3.943	5.914	7.885	9.857	11.828	25	.026	
50	29.180	1.965	3.930	5.895	7.860	9.826	11.791	30	.038	
48 00	.....	1.959	3.917	5.876	7.835	9.794	11.752			



TABLE 6.—Coordinates for projection of maps (scale 1:250,000)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi-tude.	10' longi-tude.	15' longi-tude.	20' longi-tude.	25' longi-tude.	30' longi-tude.	Longi-tude interval.	48°	49°
D.	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
48	00	1.969	3.917	5.876	7.835	9.794	11.752			
	10	5.837	1.962	3.906	5.857	7.810	9.762			
	20	11.674	1.946	3.892	5.838	7.784	9.730			
	30	17.511	1.940	3.879	5.819	7.759	9.699			
	40	23.348	1.933	3.867	5.800	7.733	9.667			
	50	29.185	1.927	3.854	5.781	7.708	9.635			
49	00	1.921	3.841	5.762	7.682	9.603	11.523			
	10	5.838	1.914	3.828	5.743	7.657	9.571			
	20	11.678	1.908	3.815	5.723	7.631	9.539			
	30	17.514	1.901	3.803	5.704	7.606	9.507			
	40	23.352	1.895	3.790	5.684	7.579	9.474			
	50	29.190	1.888	3.777	5.665	7.553	9.442			
50	00	1.882	3.764	5.646	7.527	9.409	11.291			
	10	5.839	1.875	3.750	5.626	7.501	9.376			
	20	11.678	1.869	3.737	5.606	7.475	9.344			
	30	17.517	1.862	3.724	5.587	7.449	9.311			
	40	23.356	1.856	3.711	5.567	7.422	9.278			
	50	29.194	1.849	3.696	5.547	7.396	9.245			
51	00	1.842	3.686	5.528	7.370	9.212	11.065			
	10	5.840	1.838	3.672	5.507	7.343	9.179			
	20	11.680	1.829	3.658	5.488	7.317	9.146			
	30	17.520	1.823	3.645	5.468	7.290	9.113			
	40	23.360	1.816	3.632	5.448	7.264	9.080			
	50	29.200	1.809	3.618	5.428	7.237	9.048			
52	00	1.808	3.606	5.408	7.210	9.013	10.816			
	10	5.841	1.796	3.592	5.388	7.184	8.980			
	20	11.682	1.789	3.578	5.367	7.156	8.946			
	30	17.523	1.782	3.565	5.347	7.130	8.912			
	40	23.364	1.776	3.551	5.327	7.103	8.878			
	50	29.204	1.769	3.538	5.307	7.076	8.844			
53	00	1.762	3.524	5.287	7.049	8.811	10.573			
	10	5.842	1.755	3.511	5.266	7.022	8.777			
	20	11.684	1.748	3.497	5.246	6.994	8.742			
	30	17.526	1.742	3.483	5.225	6.967	8.708			
	40	23.368	1.735	3.470	5.205	6.940	8.674			
	50	29.210	1.728	3.456	5.184	6.912	8.640			
54	00	1.721	3.442	5.164	6.885	8.606	10.327			
	10	5.843	1.714	3.429	5.143	6.857	8.572			
	20	11.686	1.707	3.415	5.122	6.830	8.537			
	30	17.529	1.700	3.401	5.101	6.802	8.502			
	40	23.372	1.694	3.387	5.080	6.774	8.468			
	50	29.214	1.687	3.373	5.060	6.746	8.433			
55	00	1.680	3.359	5.039	6.712	8.398	10.078			
	10	5.844	1.673	3.345	5.018	6.691	8.364			
	20	11.688	1.666	3.331	4.997	6.663	8.328			
	30	17.532	1.659	3.317	4.976	6.635	8.294			
	40	23.376	1.652	3.303	4.955	6.607	8.258			
	50	29.220	1.645	3.289	4.934	6.579	8.224			
56	00	1.638	3.275	4.913	6.551	8.188	9.826			

TABLE 6.—*Coordinates for projection of maps (scale 1:100,000).—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° /	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	56°	57°
56 00	.....	1.638	3.275	4.913	6.551	8.188	9.826			
10	5.845	1.631	3.261	4.892	6.522	8.158	9.784			
20	11.690	1.624	3.247	4.870	6.494	8.118	9.741			
30	17.535	1.616	3.233	4.849	6.466	8.082	9.698			
40	23.380	1.609	3.219	4.828	6.437	8.046	9.656			
50	29.224	1.602	3.204	4.807	6.409	8.011	9.613			
57 00	.....	1.595	3.190	4.785	6.380	7.976	9.571	5	Inches. 0.001	Inches. 0.001
10	5.846	1.588	3.176	4.764	6.352	7.940	9.527	10	.004	.004
20	11.692	1.581	3.162	4.742	6.323	7.904	9.485	15	.009	.009
30	17.537	1.574	3.147	4.721	6.294	7.868	9.442	20	.016	.016
40	23.383	1.566	3.133	4.699	6.266	7.832	9.399	25	.025	.024
50	29.229	1.559	3.119	4.678	6.237	7.796	9.356	30	.036	.035
58 00	.....	1.552	3.104	4.656	6.208	7.760	9.313		58°	59°
10	5.847	1.545	3.090	4.634	6.179	7.724	9.269			
20	11.694	1.538	3.075	4.613	6.150	7.688	9.226			
30	17.540	1.530	3.061	4.591	6.122	7.652	9.182	5	0.001	0.001
40	23.387	1.523	3.046	4.569	6.093	7.616	9.139	10	.004	.004
50	29.234	1.516	3.032	4.547	6.063	7.579	9.095	15	.009	.008
59 00	.....	1.509	3.017	4.526	6.034	7.543	9.052	20	.015	.015
10	5.848	1.501	3.003	4.504	6.005	7.506	9.008	25	.024	.024
20	11.695	1.494	2.988	4.482	5.976	7.470	8.963	30	.034	.034
30	17.543	1.487	2.973	4.460	5.946	7.433	8.920			
40	23.391	1.479	2.959	4.438	5.917	7.396	8.876		60°	61°
50	29.238	1.472	2.944	4.416	5.888	7.360	8.831			
60 00	.....	1.455	2.929	4.394	5.858	7.323	8.788	5	0.001	0.001
10	5.849	1.457	2.914	4.372	5.829	7.286	8.743	10	.004	.004
20	11.697	1.450	2.900	4.349	5.799	7.249	8.699	15	.008	.008
30	17.546	1.442	2.885	4.327	5.770	7.212	8.654	20	.016	.014
40	23.394	1.435	2.870	4.305	5.740	7.175	8.610	25	.023	.023
50	29.243	1.428	2.855	4.283	5.710	7.138	8.566	30	.033	.033
61 00	.....	1.320	2.840	4.261	5.681	7.101	8.521			
10	5.850	1.313	2.825	4.238	5.651	7.064	8.476		62°	63°
20	11.699	1.406	2.810	4.216	5.621	7.026	8.431			
30	17.549	1.398	2.795	4.193	5.591	6.988	8.386			
40	23.398	1.390	2.781	4.171	5.561	6.952	8.342			
50	29.248	1.383	2.766	4.148	5.531	6.914	8.297	5	0.001	0.001
62 00	.....	1.375	2.751	4.126	5.501	6.877	8.252	10	.004	.003
10	5.850	1.368	2.736	4.103	5.471	6.839	8.207	15	.008	.008
20	11.701	1.360	2.720	4.081	5.441	6.801	8.161	20	.014	.014
30	17.551	1.353	2.705	4.058	5.410	6.763	8.116	25	.022	.022
40	23.402	1.345	2.690	4.035	5.380	6.726	8.071	30	.032	.031
50	29.252	1.338	2.675	4.013	5.350	6.688	8.026		64°	
63 00	.....	1.330	2.660	3.990	5.320	6.650	7.980			
10	5.851	1.322	2.645	3.967	5.290	6.612	7.934	5	0.001	
20	11.702	1.315	2.630	3.944	5.260	6.574	7.889	10	.003	
30	17.554	1.307	2.614	3.921	5.228	6.536	7.843	15	.008	
40	23.405	1.300	2.599	3.899	5.198	6.498	7.797	20	.013	
50	29.256	1.292	2.584	3.876	5.168	6.460	7.751	25	.021	
64 00	.....	1.284	2.569	3.853	5.137	6.422	7.706	30	.030	

TABLE 6.—Coordinates for projection of maps (scale 1:133,000)—Continued.  
[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abacissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter val.	64°	65°
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
64 00	.....	1.284	2.569	3.853	5.137	6.422	7.706			
10	5.852	1.277	2.553	3.830	5.106	6.383	7.660			
20	11.704	1.269	2.538	3.807	5.076	6.345	7.614			
30	17.556	1.261	2.523	3.784	5.045	6.307	7.568			
40	23.408	1.254	2.507	3.761	5.014	6.268	7.522			
50	29.260	1.246	2.492	3.738	4.984	6.230	7.476			
65 00	.....	1.238	2.477	3.715	4.953	6.192	7.430	5	Inches. 0.001	Inches. 0.001
10	5.853	1.231	2.461	3.692	4.922	6.153	7.384	10	.003	.003
20	11.706	1.223	2.440	3.669	4.891	6.114	7.337	15	.006	.007
30	17.558	1.215	2.430	3.645	4.860	6.075	7.290	20	.013	.013
40	23.411	1.207	2.415	3.622	4.829	6.037	7.244	25	.021	.020
50	29.264	1.200	2.399	3.599	4.798	5.998	7.198	30	.030	.029
66 00	.....	1.192	2.384	3.575	4.767	5.959	7.151			
10	5.854	1.184	2.368	3.552	4.736	5.920	7.104		66°	67°
20	11.707	1.176	2.352	3.529	4.706	5.881	7.057			
30	17.561	1.168	2.337	3.505	4.673	5.842	7.010	5	0.001	0.001
40	23.414	1.161	2.321	3.482	4.642	5.803	6.963	10	.003	.003
50	29.268	1.153	2.306	3.458	4.611	5.764	6.916	15	.007	.007
67 00	.....	1.145	2.290	3.435	4.580	5.725	6.869	20	.013	.012
10	5.854	1.137	2.274	3.411	4.549	5.686	6.822	25	.020	.019
20	11.709	1.129	2.258	3.388	4.517	5.646	6.775	30	.029	.028
30	17.563	1.121	2.243	3.364	4.485	5.607	6.728			
40	23.418	1.113	2.227	3.340	4.454	5.567	6.680		68°	69°
50	29.272	1.106	2.211	3.317	4.422	5.528	6.634			
68 00	.....	1.098	2.195	3.293	4.391	5.489	6.586	5	0.001	0.001
10	5.855	1.090	2.180	3.269	4.359	5.449	6.539	10	.003	.003
20	11.710	1.082	2.164	3.246	4.328	5.410	6.491	15	.007	.006
30	17.565	1.074	2.148	3.223	4.296	5.370	6.443	20	.012	.011
40	23.420	1.066	2.132	3.198	4.264	5.330	6.396	25	.019	.016
50	29.275	1.058	2.116	3.174	4.232	5.291	6.349	30	.027	.026
69 00	.....	1.050	2.100	3.151	4.201	5.251	6.301			
10	5.856	1.042	2.084	3.127	4.169	5.211	6.253		70°	71°
20	11.712	1.034	2.068	3.103	4.137	5.171	6.206			
30	17.567	1.026	2.052	3.079	4.105	5.131	6.157			
40	23.423	1.018	2.037	3.055	4.073	5.092	6.110			
50	29.279	1.010	2.021	3.031	4.041	5.052	6.062	5	0.001	0.001
70 00	.....	1.002	2.006	3.007	4.009	5.012	6.014	10	.003	.003
10	5.856	.994	1.989	2.983	3.977	4.972	5.966	15	.006	.006
20	11.713	.986	1.972	2.959	3.945	4.931	5.917	20	.011	.010
30	17.570	.978	1.956	2.935	3.913	4.891	5.869	25	.017	.016
40	23.425	.970	1.940	2.911	3.881	4.851	5.821	30	.024	.024
50	29.282	.962	1.924	2.886	3.848	4.811	5.773		72°	
71 00	.....	.954	1.908	2.862	3.816	4.771	5.725			
10	5.857	.946	1.892	2.838	3.784	4.730	5.676	5	0.001	
20	11.714	.938	1.876	2.814	3.752	4.690	5.628	10	.003	
30	17.572	.930	1.860	2.790	3.720	4.650	5.579	15	.006	
40	23.429	.922	1.844	2.765	3.687	4.609	5.531	20	.010	
50	29.286	.914	1.828	2.741	3.655	4.569	5.483	25	.016	
72 00	.....	.906	1.811	2.717	3.623	4.529	5.434	30	.023	

TABLE 6.—Coordinates for projection of maps (scale 1:111,111)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	72°	73°
D M	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
72 00	.....	.906	1.811	2.717	3.623	4.529	5.434			
10	5.856	.898	1.796	2.693	3.590	4.488	5.386			
20	11.716	.889	1.779	2.668	3.558	4.447	5.336			
30	17.573	.881	1.763	2.644	3.525	4.407	5.288			
40	23.431	.873	1.746	2.620	3.493	4.366	5.239			
50	29.289	.865	1.730	2.596	3.460	4.326	5.190			
73 00	.....	.857	1.714	2.571	3.428	4.286	5.141			
10	5.858	.849	1.697	2.545	3.396	4.244	5.092			
20	11.717	.841	1.681	2.522	3.362	4.203	5.044			
30	17.575	.832	1.666	2.497	3.330	4.162	4.994			
40	23.434	.824	1.648	2.473	3.297	4.121	4.945			
50	29.292	.816	1.632	2.448	3.264	4.081	4.897			
74 00	.....	.808	1.616	2.424	3.232	4.040	4.847			
10	5.859	.800	1.599	2.399	3.199	3.999	4.798			
20	11.718	.791	1.583	2.374	3.160	3.957	4.748			
30	17.577	.783	1.566	2.350	3.123	3.916	4.699			
40	23.436	.775	1.550	2.325	3.100	3.875	4.650			
50	29.295	.767	1.534	2.300	3.067	3.834	4.601			
75 00	.....	.759	1.517	2.276	3.034	3.793	4.552			
10	5.860	.750	1.501	2.251	3.002	3.752	4.502			
20	11.719	.742	1.484	2.226	2.968	3.711	4.453			
30	17.578	.734	1.468	2.201	2.935	3.669	4.403			
40	23.438	.726	1.451	2.177	2.902	3.628	4.354			
50	29.298	.717	1.435	2.152	2.870	3.587	4.304			
76 00	.....	.709	1.418	2.127	2.836	3.546	4.255			
10	5.860	.701	1.402	2.102	2.803	3.504	4.205			
20	11.720	.692	1.386	2.078	2.770	3.463	4.155			
30	17.580	.684	1.369	2.053	2.737	3.421	4.105			
40	23.440	.676	1.352	2.028	2.704	3.380	4.056			
50	29.300	.668	1.335	2.003	2.671	3.339	4.006			
77 00	.....	.659	1.319	1.978	2.638	3.297	3.956			
10	5.860	.651	1.302	1.953	2.604	3.256	3.907			
20	11.721	.643	1.285	1.928	2.571	3.214	3.856			
30	17.582	.634	1.269	1.903	2.538	3.172	3.806			
40	23.442	.626	1.252	1.878	2.504	3.131	3.757			
50	29.302	.618	1.235	1.853	2.471	3.089	3.706			
78 00	.....	.609	1.219	1.828	2.438	3.047	3.656			
10	5.861	.601	1.202	1.803	2.404	3.005	3.606			
20	11.722	.593	1.185	1.778	2.371	2.964	3.556			
30	17.583	.584	1.169	1.753	2.338	2.922	3.506			
40	23.444	.576	1.152	1.728	2.304	2.880	3.456			
50	29.304	.568	1.135	1.703	2.270	2.838	3.406			
79 00	.....	.559	1.119	1.678	2.237	2.797	3.356			
10	5.861	.551	1.102	1.653	2.204	2.755	3.305			
20	11.723	.542	1.085	1.628	2.170	2.713	3.255			
30	17.584	.534	1.068	1.602	2.136	2.671	3.205			
40	23.445	.526	1.052	1.577	2.103	2.629	3.155			
50	29.306	.517	1.035	1.552	2.070	2.587	3.104			
80 00	.....	.509	1.018	1.527	2.036	2.545	3.054			

TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111320}$ ).

[From Smithsonian Geographical Tables.]

Latitude of parallel	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longitude.	10' longitude.	15' longitude.	20' longitude.	25' longitude.	30' longitude.			
D. M.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longitude interval.	0°	1°
0 00	.....	6.764	11.529	17.293	23.056	28.822	34.586			
10	11.451	6.764	11.526	17.293	23.057	28.821	34.585			
20	22.901	6.764	11.528	17.292	23.056	28.821	34.585			
30	34.352	6.764	11.528	17.292	23.056	28.820	34.583			
40	45.803	6.764	11.528	17.291	23.055	28.819	34.583			
50	57.254	6.764	11.527	17.291	23.054	28.818	34.582			
1 00	68.704	6.764	11.527	17.291	23.054	28.818	34.581			
10	11.451	6.763	11.526	17.289	23.052	28.816	34.579			
20	22.901	6.763	11.525	17.288	23.050	28.813	34.576			
30	34.352	6.762	11.524	17.287	23.049	28.811	34.573			
40	45.803	6.762	11.524	17.285	23.047	28.809	34.571			
50	57.254	6.761	11.523	17.284	23.045	28.807	34.568			
2 00	68.704	6.761	11.522	17.283	23.044	28.805	34.566			
10	11.451	6.760	11.520	17.281	23.041	28.801	34.561			
20	22.902	6.759	11.519	17.278	23.038	28.797	34.556			
30	34.353	6.759	11.517	17.276	23.035	28.794	34.552			
40	45.804	6.758	11.516	17.274	23.032	28.790	34.548			
50	57.254	6.757	11.514	17.272	23.029	28.786	34.543			
3 00	68.705	6.756	11.513	17.270	23.026	28.783	34.539			
10	11.451	6.756	11.511	17.267	23.022	28.778	34.533			
20	22.902	6.754	11.509	17.264	23.018	28.773	34.527			
30	34.353	6.753	11.507	17.260	23.014	28.767	34.520			
40	45.804	6.752	11.505	17.257	23.010	28.762	34.514			
50	57.255	6.751	11.503	17.254	23.006	28.757	34.508			
4 00	68.706	6.750	11.501	17.251	23.002	28.752	34.502			
10	11.451	6.749	11.498	17.247	22.996	28.746	34.495			
20	22.903	6.748	11.496	17.243	22.991	28.739	34.487			
30	34.354	6.746	11.493	17.240	22.986	28.733	34.479			
40	45.806	6.745	11.490	17.236	22.981	28.726	34.471			
50	57.256	6.744	11.488	17.232	22.976	28.720	34.463			
5 00	68.706	6.743	11.485	17.228	22.970	28.713	34.456			
10	11.452	6.741	11.482	17.223	22.964	28.706	34.446			
20	22.903	6.739	11.479	17.218	22.958	28.697	34.436			
30	34.355	6.738	11.476	17.213	22.951	28.689	34.427			
40	45.806	6.736	11.472	17.209	22.945	28.681	34.417			
50	57.258	6.735	11.469	17.204	22.938	28.673	34.408			
6 00	68.710	6.733	11.466	17.199	22.932	28.665	34.398			
10	11.452	6.731	11.462	17.193	22.924	28.656	34.387			
20	22.904	6.729	11.458	17.188	22.917	28.646	34.375			
30	34.356	6.727	11.455	17.182	22.910	28.637	34.364			
40	45.808	6.726	11.451	17.177	22.902	28.628	34.353			
50	57.260	6.724	11.447	17.171	22.894	28.618	34.342			
7 00	68.712	6.722	11.443	17.165	22.887	28.609	34.330			

TABLE 7.—Coordinates for projection of maps (scale 1:1111)—Continued.  
[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distance from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude interval.	7°	
0 0	Inches. 68.712	Inches. 5.722	Inches. 11.448	Inches. 17.165	Inches. 22.887	Inches. 28.609	Inches. 34.330			
10	11.452	5.720	11.439	17.159	22.878	28.598	34.317			
20	22.906	5.717	11.435	17.152	22.869	28.587	34.304			
30	34.358	5.715	11.430	17.145	22.859	28.576	34.291			
40	45.810	5.713	11.426	17.139	22.852	28.565	34.278			
50	57.262	5.711	11.422	17.132	22.843	28.554	34.265			
8 00	68.715	5.709	11.417	17.126	22.834	28.543	34.252	5	Inch. 0.000	Inch. 0.000
10	11.453	5.706	11.412	17.119	22.825	28.531	34.237	10	.002	.001
20	22.906	5.704	11.407	17.111	22.815	28.519	34.222	15	.006	.005
30	34.359	5.701	11.403	17.104	22.806	28.507	34.208	20	.010	.009
40	45.812	5.699	11.398	17.098	22.796	28.494	34.193	25	.013	.012
50	57.265	5.696	11.393	17.089	22.786	28.482	34.178	30	.015	.014
9 00	68.718	5.694	11.388	17.082	22.776	28.470	34.163		9°	10°
10	11.454	5.691	11.382	17.073	22.764	28.456	34.147			
20	22.907	5.688	11.377	17.065	22.754	28.443	34.130	5	0.001	0.001
30	34.361	5.686	11.371	17.057	22.742	28.428	34.114	10	.003	.003
40	45.814	5.683	11.366	17.049	22.732	28.415	34.097	15	.006	.006
50	57.268	5.680	11.360	17.040	22.720	28.401	34.081	20	.010	.011
10 00	68.722	5.677	11.355	17.031	22.710	28.387	34.064	25	.013	.013
10	11.454	5.674	11.349	17.023	22.699	28.372	34.046	30	.016	.016
20	22.909	5.671	11.343	17.014	22.685	28.357	34.028			
30	34.363	5.668	11.337	17.005	22.673	28.342	34.010			
40	45.817	5.665	11.331	16.996	22.661	28.327	33.992			
50	57.272	5.662	11.324	16.987	22.649	28.311	33.973			
11 00	68.726	5.659	11.318	16.978	22.637	28.296	33.956		11°	12°
10	11.455	5.656	11.312	16.969	22.624	28.280	33.936	5	0.001	0.001
20	22.910	5.652	11.305	16.959	22.610	28.263	33.915	10	.003	.003
30	34.365	5.649	11.298	16.948	22.597	28.246	33.896	15	.007	.007
40	45.820	5.646	11.292	16.938	22.584	28.229	33.875	20	.013	.014
50	57.275	5.642	11.285	16.928	22.570	28.213	33.856	25	.020	.021
12 00	68.730	5.639	11.278	16.918	22.557	28.196	33.836	30	.023	.023
10	11.456	5.636	11.271	16.907	22.542	28.178	33.814			
20	22.912	5.632	11.264	16.896	22.528	28.160	33.792			
30	34.367	5.628	11.257	16.885	22.514	28.142	33.770			
40	45.823	5.625	11.250	16.874	22.499	28.124	33.749		13°	14°
50	57.279	5.621	11.242	16.864	22.486	28.106	33.727			
13 00	68.735	5.618	11.235	16.853	22.470	28.088	33.706	5	0.001	0.001
10	11.457	5.614	11.227	16.841	22.455	28.069	33.682	10	.004	.004
20	22.913	5.610	11.220	16.829	22.439	28.049	33.659	15	.008	.009
30	34.370	5.606	11.212	16.818	22.424	28.030	33.635	20	.015	.016
40	45.827	5.602	11.204	16.806	22.408	28.010	33.612	25	.023	.025
50	57.284	5.598	11.196	16.794	22.392	27.991	33.589	30	.033	.035
14 00	68.740	5.594	11.188	16.783	22.377	27.971	33.566			

TABLE 7.—*Coordinates for projection of maps (scale  $\frac{1}{111,320}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
° ' 14 00	Inches. 68.740	Inches. 5.594	Inches. 11.188	Inches. 16.783	Inches. 22.377	Inches. 27.971	Inches. 33.565	Longi- tude inter- val.	14°	15°
10	11.458	5.590	11.180	16.770	22.360	27.960	33.540		Inches. 0.001 .004 .009 .016 .025 .035	Inches. 0.001 .004 .009 .017 .026 .038
20	22.916	5.586	11.172	16.758	22.344	27.930	33.515			
30	34.373	5.582	11.163	16.745	22.327	27.909	33.490			
40	45.830	5.578	11.155	16.733	22.310	27.888	33.465			
50	57.288	5.573	11.147	16.720	22.294	27.867	33.440			
15 00	68.746	5.569	11.138	16.708	22.277	27.846	33.415		16°	17°
10	11.459	5.565	11.130	16.694	22.259	27.824	33.389			
20	22.917	5.560	11.121	16.681	22.241	27.802	33.362			
30	34.376	5.556	11.112	16.667	22.223	27.779	33.335			
40	45.834	5.551	11.103	16.654	22.206	27.757	33.308			
50	57.293	5.547	11.094	16.641	22.188	27.735	33.282			
16 00	68.752	5.542	11.085	16.628	22.170	27.713	33.255		18°	19°
10	11.460	5.538	11.076	16.613	22.151	27.689	33.227			
20	22.919	5.533	11.066	16.599	22.132	27.665	33.198			
30	34.379	5.528	11.057	16.585	22.113	27.642	33.170			
40	45.838	5.524	11.047	16.571	22.094	27.618	33.142			
50	57.296	5.519	11.038	16.556	22.075	27.594	33.113			
17 00	68.758	5.514	11.028	16.542	22.056	27.571	33.085		20°	21°
10	11.461	5.509	11.018	16.527	22.036	27.546	33.055			
20	22.921	5.504	11.008	16.512	22.016	27.521	33.025			
30	34.382	5.499	10.998	16.497	21.996	27.495	32.994			
40	45.843	5.494	10.988	16.482	21.976	27.470	32.964			
50	57.304	5.489	10.978	16.467	21.956	27.445	32.934			
18 00	68.764	5.484	10.968	16.452	21.936	27.420	32.904		22°	23°
10	11.462	5.479	10.957	16.438	21.915	27.394	32.872			
20	22.924	5.473	10.947	16.423	21.894	27.367	32.840			
30	34.386	5.468	10.936	16.404	21.872	27.341	32.809			
40	45.848	5.463	10.926	16.389	21.852	27.315	32.777			
50	57.310	5.458	10.915	16.373	21.830	27.288	32.746			
19 00	68.771	5.452	10.905	16.357	21.809	27.262	32.714		24°	25°
10	11.463	5.447	10.893	16.340	21.787	27.234	32.680			
20	22.926	5.441	10.882	16.324	21.765	27.206	32.647			
30	34.390	5.436	10.871	16.307	21.742	27.178	32.614			
40	45.853	5.430	10.860	16.290	21.720	27.150	32.580			
50	57.316	5.424	10.849	16.274	21.698	27.123	32.547			
20 00	68.779	5.419	10.838	16.257	21.676	27.095	32.513		26°	27°
10	11.464	5.413	10.826	16.239	21.652	27.065	32.478			
20	22.929	5.407	10.814	16.222	21.629	27.036	32.443			
30	34.394	5.401	10.803	16.204	21.605	27.007	32.408			
40	45.858	5.396	10.791	16.187	21.582	26.978	32.373			
50	57.322	5.390	10.779	16.169	21.558	26.948	32.338			
21 00	68.787	5.384	10.768	16.151	21.535	26.919	32.303		28°	29°
10	11.465	5.378	10.756	16.133	21.511	26.888	32.267			
20	22.931	5.372	10.744	16.115	21.487	26.857	32.231			
30	34.398	5.366	10.732	16.097	21.463	26.826	32.195			
40	45.862	5.360	10.720	16.079	21.439	26.795	32.159			
50	57.328	5.354	10.708	16.061	21.415	26.764	32.123			



TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111,320}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abacissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	21°	22°
° ' 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
21 00	68.787	5.384	10.768	16.151	21.535	26.919	32.303			
10	11.466	5.378	10.756	16.133	21.511	26.889	32.286			
20	22.932	5.372	10.743	16.115	21.486	26.858	32.280			
30	34.397	5.366	10.731	16.097	21.462	26.828	32.193			
40	45.863	5.359	10.719	16.078	21.438	26.797	32.156			
50	57.329	5.353	10.707	16.060	21.413	26.767	32.120			
22 00	68.796	5.347	10.694	16.042	21.389	26.736	32.083			
10	11.467	5.341	10.682	16.022	21.363	26.704	32.045			
20	22.934	5.334	10.669	16.003	21.338	26.672	32.008			
30	34.401	5.328	10.656	15.984	21.312	26.641	31.969			
40	45.868	5.322	10.643	15.965	21.287	26.609	31.930			
50	57.336	5.315	10.631	15.946	21.261	26.577	31.892			
23 00	68.803	5.309	10.618	15.927	21.236	26.545	31.853			
10	11.469	5.302	10.604	15.907	21.209	26.511	31.813			
20	22.937	5.296	10.591	15.887	21.182	26.478	31.774			
30	34.406	5.289	10.578	15.867	21.156	26.445	31.733			
40	45.874	5.282	10.565	15.847	21.129	26.412	31.694			
50	57.343	5.276	10.551	15.827	21.102	26.378	31.654			
24 00	68.812	5.269	10.538	15.807	21.076	26.345	31.614			
10	11.470	5.263	10.526	15.789	21.052	26.315	31.577			
20	22.940	5.256	10.512	15.767	21.023	26.279	31.535			
30	34.410	5.249	10.498	15.746	20.996	26.244	31.493			
40	45.880	5.242	10.483	15.725	20.967	26.209	31.450			
50	57.350	5.235	10.469	15.704	20.938	26.173	31.408			
25 00	68.821	5.227	10.455	15.682	20.910	26.137	31.365			
10	11.472	5.220	10.441	15.661	20.881	26.101	31.322			
20	22.943	5.213	10.426	15.639	20.852	26.065	31.279			
30	34.415	5.206	10.412	15.618	20.824	26.029	31.235			
40	45.886	5.199	10.397	15.596	20.795	25.993	31.192			
50	57.358	5.191	10.383	15.575	20.766	25.958	31.149			
26 00	68.830	5.184	10.369	15.553	20.737	25.922	31.106			
10	11.473	5.177	10.354	15.531	20.708	25.884	31.061			
20	22.946	5.169	10.339	15.508	20.678	25.847	31.017			
30	34.419	5.162	10.324	15.486	20.648	25.810	30.972			
40	45.892	5.154	10.309	15.463	20.618	25.772	30.927			
50	57.365	5.147	10.294	15.441	20.588	25.735	30.882			
27 00	68.838	5.140	10.279	15.419	20.558	25.698	30.838			
10	11.475	5.132	10.264	15.396	20.528	25.659	30.791			
20	22.950	5.124	10.248	15.373	20.497	25.621	30.745			
30	34.424	5.116	10.233	15.349	20.466	25.582	30.699			
40	45.899	5.109	10.218	15.326	20.435	25.544	30.653			
50	57.374	5.101	10.202	15.303	20.404	25.505	30.607			
28 00	68.849	5.093	10.187	15.280	20.374	25.467	30.560			

TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{31,118}$ )—Continued.  
[From Smithsonian Geographical Tables.]

Lat- tude of parallel.	Meridio- nal dis- tances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.		
28 00	<i>Inches.</i> 68.849	<i>Inches.</i> 5.093	<i>Inches.</i> 10.187	<i>Inches.</i> 15.280	<i>Inches.</i> 20.374	<i>Inches.</i> 25.467	<i>Inches.</i> 30.561		28°	29°
10	11.476	5.085	10.171	15.256	20.342	25.427	30.513			
20	22.953	5.077	10.155	15.232	20.310	25.387	30.465			
30	34.430	5.069	10.139	15.208	20.278	25.347	30.417			
40	45.906	5.061	10.123	15.185	20.246	25.308	30.369			
50	57.383	5.054	10.107	15.161	20.214	25.268	30.321			
29 00	68.856	5.046	10.091	15.137	20.182	25.228	30.274	5	<i>Inches.</i> 0.002	<i>Inches.</i> 0.002
10	11.478	5.037	10.075	15.112	20.150	25.187	30.224	10	.007	.007
20	22.957	5.029	10.058	15.087	20.117	25.146	30.175	15	.016	.016
30	34.435	5.021	10.042	15.063	20.084	25.105	30.126	20	.028	.028
40	45.913	5.013	10.025	15.038	20.051	25.064	30.076	25	.043	.044
50	57.391	5.004	10.009	15.013	20.018	25.022	30.027	30	.063	.064
30 00	68.870	4.996	9.993	14.989	19.985	24.981	29.978		30°	31°
10	11.480	4.988	9.976	14.963	19.951	24.939	29.927			
20	22.960	4.979	9.959	14.938	19.917	24.896	29.876			
30	34.440	4.971	9.942	14.912	19.883	24.854	29.825			
40	45.920	4.962	9.925	14.887	19.849	24.812	29.774			
50	57.400	4.954	9.908	14.862	19.815	24.769	29.723			
31 00	68.880	4.946	9.891	14.836	19.782	24.727	29.672	5	0.002	0.002
10	11.482	4.937	9.873	14.810	19.747	24.683	29.620	10	.007	.007
20	22.964	4.928	9.856	14.784	19.712	24.640	29.568	15	.016	.017
30	34.446	4.919	9.838	14.758	19.677	24.596	29.515	20	.029	.030
40	45.927	4.910	9.821	14.731	19.642	24.552	29.463	25	.045	.046
50	57.409	4.902	9.804	14.706	19.607	24.509	29.411	30	.065	.067
32 00	68.891	4.893	9.786	14.679	19.572	24.465	29.358		32°	33°
10	11.484	4.884	9.768	14.652	19.536	24.420	29.305			
20	22.967	4.875	9.750	14.625	19.500	24.376	29.251			
30	34.451	4.866	9.732	14.598	19.465	24.331	29.197			
40	45.934	4.857	9.714	14.572	19.429	24.286	29.143			
50	57.418	4.848	9.696	14.545	19.393	24.241	29.089			
33 00	68.902	4.839	9.679	14.518	19.357	24.195	29.036	5	0.002	0.002
10	11.485	4.830	9.660	14.490	19.320	24.150	28.980	10	.007	.008
20	22.971	4.821	9.642	14.462	19.283	24.104	28.925	15	.017	.017
30	34.456	4.812	9.623	14.435	19.246	24.058	28.870	20	.030	.031
40	45.942	4.803	9.605	14.407	19.210	24.012	28.814	25	.047	.048
50	57.427	4.793	9.586	14.379	19.173	23.966	28.759	30	.069	.069
34 00	68.913	4.784	9.568	14.352	19.136	23.920	28.704		34°	35°
10	11.487	4.774	9.549	14.323	19.098	23.872	28.647			
20	22.975	4.765	9.530	14.295	19.060	23.825	28.590			
30	34.462	4.755	9.511	14.267	19.022	23.778	28.533			
40	45.949	4.746	9.492	14.238	18.984	23.730	28.476			
50	57.437	4.737	9.473	14.210	18.946	23.683	28.420			
35 00	68.924	4.727	9.454	14.181	18.908	23.636	28.363	5	0.002	0.002
10	11.487	4.714	9.439	14.152	18.869	23.587	28.305	10	.008	.008
20	22.975	4.705	9.420	14.123	18.830	23.538	28.247	15	.017	.018
30	34.462	4.695	9.401	14.094	18.791	23.489	28.189	20	.031	.031
40	45.949	4.686	9.382	14.065	18.752	23.440	28.130	25	.049	.049
50	57.437	4.677	9.363	14.036	18.713	23.391	28.071	30	.070	.071

TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111,320}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longitude.	10' longitude.	15' longitude.	20' longitude.	25' longitude.	30' longitude.	Longitude interval.	35°	36°
° ' "	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
35 00	68.924	4.727	9.454	14.181	18.908	23.635	28.363			
10	11.499	4.717	9.435	14.162	18.870	23.598	28.306			
20	22.978	4.708	9.416	14.123	18.831	23.559	28.249			
30	34.458	4.698	9.396	14.094	18.792	23.490	28.189			
40	45.937	4.688	9.377	14.065	18.753	23.442	28.130			
50	57.416	4.679	9.357	14.036	18.714	23.393	28.072			
36 00	68.935	4.669	9.338	14.007	18.676	23.345	28.014			
10	11.491	4.659	9.318	13.977	18.636	23.296	27.954			
20	22.983	4.649	9.298	13.947	18.596	23.245	27.894			
30	34.474	4.639	9.278	13.917	18.556	23.196	27.835			
40	45.965	4.629	9.258	13.887	18.517	23.146	27.775			
50	57.457	4.619	9.238	13.858	18.477	23.096	27.715			
37 00	68.948	4.609	9.219	13.828	18.437	23.046	27.656			
10	11.493	4.599	9.199	13.797	18.396	22.996	27.594			
20	22.986	4.589	9.178	13.767	18.356	22.944	27.533			
30	34.480	4.579	9.157	13.736	18.315	22.893	27.472			
40	45.973	4.568	9.137	13.706	18.274	22.843	27.411			
50	57.466	4.558	9.117	13.675	18.234	22.792	27.350			
38 00	68.959	4.548	9.096	13.645	18.193	22.741	27.289			
10	11.495	4.538	9.076	13.613	18.151	22.689	27.227			
20	22.990	4.527	9.055	13.582	18.109	22.637	27.164			
30	34.485	4.517	9.034	13.551	18.068	22.585	27.102			
40	45.980	4.506	9.013	13.520	18.026	22.533	27.039			
50	57.475	4.496	8.992	13.488	17.984	22.481	26.977			
39 00	68.970	4.486	8.971	13.457	17.943	22.429	26.914			
10	11.497	4.475	8.950	13.425	17.900	22.375	26.851			
20	22.994	4.464	8.929	13.393	17.858	22.322	26.787			
30	34.491	4.454	8.908	13.361	17.815	22.269	26.723			
40	45.988	4.443	8.886	13.330	17.773	22.216	26.659			
50	57.485	4.433	8.865	13.298	17.730	22.163	26.596			
40 00	68.982	4.422	8.844	13.266	17.688	22.110	26.532			
10	11.499	4.411	8.822	13.233	17.644	22.055	26.466			
20	22.998	4.400	8.800	13.201	17.601	22.001	26.401			
30	34.497	4.389	8.779	13.168	17.557	21.947	26.336			
40	45.996	4.378	8.757	13.135	17.514	21.892	26.271			
50	57.495	4.368	8.735	13.103	17.470	21.838	26.206			
41 00	68.994	4.357	8.713	13.070	17.427	21.784	26.140			
10	11.501	4.346	8.691	13.037	17.383	21.728	26.074			
20	23.002	4.335	8.669	13.004	17.338	21.673	26.007			
30	34.503	4.324	8.647	12.971	17.294	21.618	25.941			
40	46.004	4.312	8.625	12.937	17.250	21.562	25.875			
50	57.505	4.301	8.603	12.904	17.205	21.507	25.808			
42 00	69.007	4.290	8.581	12.871	17.161	21.451	25.742			

TABLE 7.—Coordinates for projection of maps (scale 633333)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.		Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
			5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.			
°	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longi- tude inter- val.	42°	43°
42	00	69.007	4.290	8.581	12.871	17.161	21.451	25.742			
	10	11.503	4.279	8.558	12.837	17.116	21.395	25.674			
	20	23.006	4.268	8.535	12.803	17.071	21.338	25.606			
	30	34.510	4.256	8.513	12.769	17.025	21.282	25.538			
	40	46.013	4.245	8.490	12.735	16.980	21.225	25.470			
	50	57.516	4.234	8.467	12.701	16.935	21.169	25.402			
43	00	69.019	4.222	8.445	12.667	16.890	21.112	25.334			
	10	11.505	4.211	8.422	12.633	16.844	21.054	25.265			
	20	23.010	4.199	8.399	12.598	16.798	20.997	25.196			
	30	34.515	4.188	8.376	12.564	16.751	20.939	25.127			
	45	46.020	4.176	8.353	12.529	16.705	20.882	25.058			
	50	57.525	4.165	8.330	12.494	16.659	20.824	24.989			
44	00	69.030	4.153	8.307	12.460	16.613	20.767	24.920		44°	45°
	10	11.507	4.142	8.283	12.425	16.566	20.708	24.849			
	20	23.014	4.130	8.260	12.390	16.519	20.649	24.779			
	30	34.522	4.118	8.236	12.354	16.473	20.591	24.709			
	40	46.029	4.106	8.213	12.319	16.426	20.532	24.638			
	50	57.536	4.095	8.189	12.284	16.379	20.473	24.568			
45	00	69.043	4.083	8.166	12.249	16.332	20.415	24.498			
	10	11.509	4.071	8.142	12.213	16.284	20.355	24.426			
	20	23.018	4.059	8.118	12.177	16.236	20.295	24.354			
	30	34.528	4.047	8.094	12.141	16.188	20.236	24.283			
	40	46.037	4.035	8.070	12.105	16.141	20.176	24.211			
	50	57.546	4.023	8.046	12.070	16.093	20.116	24.139			
46	00	69.055	4.011	8.023	12.034	16.045	20.056	24.068		46°	47°
	10	11.511	3.999	7.998	11.997	15.997	19.996	23.995			
	20	23.023	3.987	7.974	11.961	15.948	19.935	23.922			
	30	34.534	3.975	7.950	11.925	15.899	19.974	23.849			
	40	46.045	3.963	7.925	11.888	15.851	19.813	23.776			
	50	57.557	3.951	7.901	11.852	15.802	19.753	23.703			
47	00	69.068	3.938	7.877	11.815	15.754	19.692	23.630			
	10	11.513	3.926	7.852	11.778	15.704	19.630	23.556			
	20	23.027	3.914	7.827	11.741	15.655	19.569	23.482			
	30	34.540	3.901	7.803	11.704	15.606	19.507	23.408			
	40	46.053	3.889	7.778	11.667	15.556	19.445	23.334		48°	49°
	50	57.567	3.877	7.753	11.630	15.507	19.383	23.260			
48	00	69.080	3.864	7.729	11.593	15.457	19.322	23.186			
	10	11.516	3.852	7.704	11.555	15.407	19.259	23.111			
	20	23.031	3.839	7.679	11.518	15.357	19.196	23.035			
	30	34.546	3.827	7.653	11.480	15.307	19.134	22.960			
	40	46.062	3.814	7.628	11.442	15.257	19.071	22.885			
	50	57.577	3.802	7.603	11.405	15.206	19.008	22.810			
49	00	69.093	3.789	7.578	11.367	15.156	18.945	22.734			

TABLE 7.—Coordinates for projection of maps (scale 1:100,000)—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longitude.	10' longitude.	15' longitude.	20' longitude.	25' longitude.	30' longitude.	Longitude interval.	49°	50°
49 00	69.093		7.578	11.367	15.156	18.945	22.734			
10	11.517	3.776	7.553	11.329	15.165	18.882	22.658			
20	23.085	3.784	7.527	11.291	15.054	18.818	22.581			
30	34.552	3.751	7.502	11.253		18.754	22.505			
40	46.070	3.738	7.476	11.214	14.962	18.690	22.429			
50	57.587	3.725	7.451	11.175	14.901	18.627	22.352			
50 00	69.105	3.712	7.425	11.138	14.850	18.563	22.276			
10	11.520	3.700	7.399	11.099	14.799	18.499	22.198			
20	23.039	3.687	7.374	11.060	14.747	18.434	22.121			
30	34.558	3.674	7.348	11.021	14.7	18.369	22.043			
40	46.076	3.661	7.322	10.983	14.644	18.305	21.965			
50	57.594	3.648	7.296	10.944	14.592	18.240	21.888			
51 00	69.117	3.635	7.270	10.905	14.540	18.176	21.811			
10	11.521	3.622	7.244	10.866	14.488	18.110	21.732			
20	23.043	3.609	7.218	10.827	14.436	18.045	21.653			
30	34.564	3.596	7.191	10.787	14.383	17.979	21.574			
40	46.085	3.583	7.165	10.748	14.330	17.913	21.496			
50	57.607	3.570	7.139	10.709	14.278	17.848	21.417			
52 00	69.128	3.556	7.113	10.669	14.226	17.782	21.338			
10	11.528	3.543	7.086	10.629	14.172	17.716	21.259			
20	23.047	3.530	7.060	10.589	14.119	17.649	21.179			
30	34.570	3.516	7.033	10.550	14.066	17.583	21.099			
40	46.094	3.503	7.006	10.510	14.013	17.516	21.019			
50	57.617	3.490	6.980	10.470	13.960	17.450	20.939			
53 00	69.140	3.477	6.953	10.430	13.906	17.383	20.860			
10	11.525	3.463	6.926	10.389	13.852	17.316	20.779			
20	23.051	3.450	6.899	10.349	13.798	17.248	20.698			
30	34.576	3.436	6.872	10.309	13.745	17.181	20.617			
40	46.102	3.423	6.845	10.268	13.691	17.114	20.536			
50	57.627	3.409	6.818	10.228	13.637	17.046	20.455			
54 00	69.152	3.396	6.791	10.187	13.583	16.979	20.374			
10	11.527	3.382	6.764	10.146	13.528	16.910	20.292			
20	23.063	3.368	6.737	10.105	13.474	16.842	20.210			
30	34.582	3.355	6.709	10.064	13.419	16.774	20.128			
40	46.109	3.341	6.682	10.023	13.364	16.706	20.047			

TABLE 7.—(Coordinates for projection of maps (scale  $\frac{1}{31680}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel	Meridional distance from even degree parallels	Abscissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude	10' longi- tude	15' longi- tude	20' longi- tude	25' longi- tude	30' longi- tude	Longi- tude inter- val.	58°	57°
56 00	Inches 69.176	Inches 3.231	Inches 6.462	Inches 9.693	Inches 12.924	Inches 16.155	Inches 19.385			
10	11.531	3.217	6.434	9.651	12.868	16.085	19.301			
20	23.063	3.303	6.408	9.609	12.812	16.015	19.217			
30	34.594	3.189	6.378	9.567	12.756	15.945	19.134			
40	46.126	3.175	6.350	9.525	12.700	15.876	19.050			
50	57.658	3.161	6.322	9.483	12.644	15.806	18.966			
57 00	69.188	3.147	6.294	9.441	12.588	15.735	18.882			
10	11.533	3.133	6.266	9.398	12.531	15.664	18.797			
20	23.066	3.119	6.237	9.356	12.475	15.594	18.712			
30	34.599	3.104	6.209	9.314	12.418	15.523	18.627			
40	46.132	3.090	6.181	9.271	12.362	15.452	18.542			
50	57.666	3.076	6.152	9.229	12.306	15.381	18.457			
58 00	69.199	3.062	6.124	9.186	12.248	15.311	18.373			
10	11.535	3.048	6.096	9.143	12.191	15.239	18.287			
20	23.070	3.034	6.067	9.101	12.134	15.168	18.201			
30	34.605	3.019	6.038	9.058	12.077	15.096	18.115			
40	46.140	3.005	6.010	9.015	12.020	15.025	18.029			
50	57.675	2.991	5.981	8.972	11.962	14.953	17.944			
59 00	69.210	2.976	5.953	8.929	11.905	14.882	17.858			
10	11.537	2.962	5.924	8.885	11.847	14.809	17.771			
20	23.074	2.947	5.896	8.842	11.790	14.737	17.684			
30	34.610	2.933	5.866	8.799	11.732	14.665	17.597			
40	46.147	2.918	5.837	8.756	11.674	14.592	17.510			
50	57.684	2.904	5.808	8.712	11.616	14.520	17.424			
60 00	69.221	2.890	5.779	8.669	11.558	14.448	17.337			
10	11.539	2.875	5.750	8.625	11.500	14.375	17.249			
20	23.077	2.860	5.721	8.581	11.441	14.302	17.162			
30	34.616	2.845	5.691	8.537	11.383	14.229	17.074			
40	46.154	2.831	5.662	8.493	11.324	14.156	16.987			
50	57.698	2.816	5.633	8.450	11.266	14.083	16.899			
61 00	69.232	2.802	5.604	8.406	11.208	14.010	16.811			
10	11.540	2.787	5.574	8.361	11.148	13.936	16.723			
20	23.081	2.772	5.545	8.317	11.090	13.862	16.634			
30	34.621	2.758	5.515	8.273	11.030	13.788	16.546			
40	46.162	2.743	5.486	8.229	10.972	13.715	16.457			
50	57.702	2.728	5.456	8.184	10.912	13.641	16.369			
62 00	69.242	2.713	5.427	8.140	10.854	13.567	16.280			
10	11.542	2.699	5.397	8.096	10.794	13.493	16.191			
20	23.084	2.684	5.367	8.051	10.734	13.418	16.102			
30	34.626	2.669	5.337	8.006	10.675	13.344	16.012			
40	46.168	2.654	5.308	7.961	10.615	13.269	15.923			
50	57.710	2.639	5.278	7.917	10.556	13.195	15.833			
63 00	69.253	2.624	5.248	7.872	10.496	13.120	15.744			

TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111430}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	65°	64°
63 00	Inches. 69.263	Inches. 2.824	Inches. 5.248	Inches. 7.872	Inches. 10.496	Inches. 13.120	Inches. 15.744			
10	11.544	2.809	5.218	7.827	10.436	13.045	15.654	5 10 15 20 25 30	Inches. 0.002 .007 .015 .027 .043 .061	Inches. 0.002 .007 .015 .026 .041 .060
20	23.087	2.594	5.188	7.782	10.376	12.970	15.564			
30	34.631	2.579	5.158	7.737	10.316	12.896	15.478			
40	46.175	2.564	5.128	7.692	10.256	12.822	15.388			
50	57.718	2.549	5.098	7.647	10.196	12.745	15.298			
64 00	69.262	2.534	5.068	7.602	10.136	12.670	15.208	5 10 15 20 25 30	Inches. 0.002 .007 .015 .027 .043 .061	Inches. 0.002 .007 .015 .026 .041 .060
10	11.545	2.519	5.037	7.556	10.075	12.594	15.112			
20	23.091	2.504	5.007	7.511	10.014	12.518	15.022			
30	34.636	2.488	4.977	7.465	9.954	12.442	14.932			
40	46.182	2.473	4.947	7.420	9.893	12.366	14.840			
50	57.727	2.458	4.916	7.374	9.832	12.291	14.749			
65 00	69.272	2.443	4.886	7.329	9.772	12.215	14.658	5 10 15 20 25 30	Inches. 0.002 .006 .014 .026 .040 .056	Inches. 0.002 .006 .014 .025 .039 .055
10	11.547	2.428	4.855	7.283	9.711	12.139	14.567			
20	23.094	2.412	4.825	7.237	9.650	12.062	14.474			
30	34.641	2.397	4.794	7.191	9.588	11.986	14.382			
40	46.188	2.382	4.764	7.145	9.527	11.909	14.291			
50	57.735	2.366	4.733	7.100	9.466	11.832	14.199			
66 00	69.282	2.351	4.702	7.054	9.406	11.756	14.107	5 10 15 20 25 30	Inches. 0.002 .006 .014 .025 .039 .055	Inches. 0.002 .006 .014 .025 .039 .055
10	11.548	2.336	4.672	7.007	9.343	11.679	14.015			
20	23.097	2.320	4.641	6.961	9.282	11.602	13.922			
30	34.646	2.305	4.610	6.915	9.220	11.525	13.830			
40	46.194	2.290	4.579	6.869	9.158	11.448	13.738			
50	57.742	2.274	4.548	6.823	9.097	11.371	13.645			
67 00	69.291	2.259	4.518	6.776	9.035	11.294	13.553	5 10 15 20 25 30	Inches. 0.001 .006 .014 .024 .038 .054	Inches. 0.001 .006 .013 .023 .036 .053
10	11.550	2.243	4.487	6.730	8.973	11.217	13.460			
20	23.100	2.228	4.455	6.683	8.911	11.139	13.366			
30	34.650	2.212	4.424	6.637	8.849	11.061	13.273			
40	46.200	2.197	4.393	6.590	8.787	10.984	13.180			
50	57.750	2.181	4.362	6.543	8.724	10.906	13.087			
68 00	69.300	2.166	4.331	6.497	8.662	10.828	12.994	5 10 15 20 25 30	Inches. 0.001 .006 .013 .022 .035 .051	Inches. 0.001 .006 .012 .022 .034 .049
10	11.552	2.150	4.300	6.450	8.600	10.750	12.900			
20	23.103	2.134	4.269	6.403	8.538	10.672	12.806			
30	34.654	2.119	4.237	6.356	8.475	10.594	12.712			
40	46.206	2.103	4.206	6.309	8.412	10.516	12.619			
50	57.758	2.088	4.175	6.263	8.350	10.438	12.525			
69 00	69.309	2.072	4.144	6.216	8.288	10.360	12.431	5 10 15 20 25 30	Inches. 0.001 .006 .013 .022 .035 .051	Inches. 0.001 .006 .012 .022 .034 .049
10	11.553	2.056	4.112	6.169	8.225	10.281	12.337			
20	23.106	2.040	4.081	6.121	8.162	10.202	12.242			
30	34.659	2.025	4.049	6.074	8.099	10.124	12.148			
40	46.212	2.009	4.018	6.027	8.036	10.046	12.054			
50	57.764	1.993	3.986	5.980	7.973	9.966	11.969			
70 00	69.317	1.977	3.955	5.932	7.910	9.888	11.865	5 10 15 20 25 30	Inches. 0.001 .006 .013 .022 .035 .051	Inches. 0.001 .006 .012 .022 .034 .049
10	11.554	1.961	3.924	5.884	7.847	9.809	11.771			
20	23.108	1.945	3.893	5.836	7.784	9.730	11.677			
30	34.663	1.929	3.862	5.788	7.721	9.651	11.583			
40	46.216	1.913	3.831	5.740	7.658	9.572	11.489			
50	57.768	1.897	3.800	5.692	7.595	9.493	11.395			



TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111320}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi- tude.	10' longi- tude.	15' longi- tude.	20' longi- tude.	25' longi- tude.	30' longi- tude.	Longi- tude inter- val.	70°	71°
° ' 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
70 00	69 317	1.977	3.955	5.932	7.910	9.888	11.865			
10	11 564	1.982	3.923	5.885	7.846	9.808	11.770			
20	23 109	1.946	3.892	5.837	7.783	9.729	11.675			
30	34 663	1.930	3.880	5.790	7.720	9.650	11.579			
40	46 217	1.914	3.828	5.742	7.656	9.571	11.485			
50	57 772	1.898	3.796	5.696	7.593	9.491	11.390			
71 00	69.328	1.882	3.765	5.647	7.530	9.412	11.294			
10	11 556	1.866	3.733	5.600	7.466	9.333	11.199			
20	23.111	1.850	3.701	5.552	7.402	9.253	11.103			
30	34.667	1.835	3.669	5.504	7.338	9.173	11.008			
40	46.222	1.819	3.637	5.456	7.275	9.094	10.912			
50	57.778	1.803	3.605	5.408	7.211	9.014	10.816			
72 00	69.334	1.787	3.574	5.360	7.147	8.934	10.721			
10	11 557	1.771	3.542	5.312	7.083	8.854	10.625			
20	23.114	1.755	3.509	5.264	7.019	8.774	10.528			
30	34.670	1.739	3.477	5.216	6.955	8.694	10.432			
40	46.227	1.723	3.445	5.168	6.891	8.614	10.336			
50	57.784	1.707	3.413	5.120	6.826	8.533	10.240			
73 00	69.341	1.691	3.381	5.072	6.762	8.453	10.144			
10	11.558	1.674	3.349	5.024	6.698	8.373	10.047			
20	23.116	1.658	3.317	4.975	6.634	8.292	9.950			
30	34.674	1.642	3.284	4.927	6.569	8.211	9.853			
40	46.232	1.626	3.252	4.878	6.504	8.131	9.757			
50	57.790	1.610	3.220	4.830	6.440	8.050	9.660			
74 00	69.348	1.594	3.188	4.782	6.376	7.970	9.563			
10	11.559	1.578	3.156	4.733	6.311	7.890	9.466			
20	23.118	1.562	3.123	4.685	6.246	7.808	9.369			
30	34.677	1.545	3.091	4.636	6.181	7.727	9.272			
40	46.236	1.529	3.058	4.587	6.116	7.645	9.175			
50	57.796	1.513	3.026	4.539	6.052	7.565	9.077			
75 00	69.355	1.497	2.993	4.490	5.987	7.484	8.980			
10	11.560	1.480	2.961	4.441	5.922	7.402	8.882			
20	23.120	1.464	2.928	4.392	5.856	7.321	8.785			
30	34.681	1.448	2.896	4.344	5.792	7.240	8.687			
40	46.241	1.432	2.863	4.295	5.726	7.158	8.590			
50	57.801	1.415	2.831	4.246	5.661	7.077	8.492			
76 00	69.361	1.399	2.798	4.197	5.596	6.995	8.394			
10	11.561	1.383	2.765	4.148	5.530	6.913	8.296			
20	23.122	1.366	2.733	4.099	5.465	6.832	8.198			
30	34.683	1.350	2.700	4.050	5.400	6.750	8.099			
40	46.244	1.334	2.667	4.001	5.334	6.668	8.002			
50	57.806	1.317	2.634	3.952	5.269	6.586	7.903			
77 00	69.367	1.301	2.602	3.903	5.204	6.505	7.805			

TABLE 7.—Coordinates for projection of maps (scale  $\frac{1}{111320}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		5' longi-tude.	10' longi-tude.	15' longi-tude.	20' longi-tude.	25' longi-tude.	30' longi-tude.			
° ' 77 00	Inches. 69.367	Inches. 1.301	Inches. 2.602	Inches. 3.903	Inches. 5.204	Inches. 6.505	Inches. 7.806	Longi-tude inter-val	77°	78°
10	11.562	1.284	2.569	3.854	5.138	6.423	7.707			
20	23.124	1.268	2.536	3.804	5.072	6.341	7.609			
30	34.686	1.252	2.503	3.755	5.006	6.254	7.510			
40	46.248	1.235	2.470	3.706	4.941	6.176	7.411			
50	57.810	1.219	2.438	3.656	4.875	6.094	7.312			
78 00	69.873	1.302	2.406	3.607	4.810	6.012	7.214		Inches.	Inches.
10	11.563	1.146	2.372	3.553	4.744	5.930	7.115	5	0.001	0.001
20	23.126	1.169	2.339	3.503	4.678	5.847	7.016	10	.004	.003
30	34.689	1.153	2.306	3.453	4.612	5.765	6.918	15	.006	.006
40	46.252	1.136	2.273	3.410	4.546	5.683	6.819	20	.015	.014
50	57.814	1.120	2.240	3.360	4.480	5.600	6.720	25	.023	.021
								30	.033	.031
79 00	69.377	1.104	2.207	3.311	4.414	5.518	6.621		79°	80°
10	11.564	1.087	2.174	3.261	4.348	5.435	6.522			
20	23.127	1.070	2.141	3.211	4.282	5.352	6.422			
30	34.691	1.054	2.108	3.162	4.216	5.270	6.323			
40	46.255	1.037	2.076	3.112	4.150	5.187	6.224			
50	57.818	1.021	2.042	3.062	4.083	5.104	6.125			
80 00	69.382	1.004	2.009	3.013	4.017	5.022	6.026	5	0.001	0.001
								10	.003	.003
								15	.007	.006
								20	.013	.011
								25	.020	.018
								30	.026	.023

TABLE 8.—Coordinates for projection of maps (scale 83500).

Latitude of parallel.		Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
			2½' longitude.	5' longitude.	7½' longitude.	10' longitude.	12½' longitude.	15' longitude.			
°	'	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longitude interval.	25°	26°
25	00	.....	2.650	5.299	7.949	10.599	13.248	15.898			
	05	5.815	2.648	5.296	7.944	10.591	13.239	15.887			
	10	11.629	2.646	5.292	7.938	10.584	13.230	15.876			
	15	17.444	2.644	5.288	7.933	10.577	13.221	15.865			
	20	23.259	2.642	5.285	7.927	10.569	13.212	15.854			
	25	29.074	2.641	5.281	7.922	10.562	13.203	15.843			
	30	34.888	2.639	5.277	7.916	10.555	13.194	15.832			
	35	.....	2.637	5.274	7.911	10.548	13.184	15.821	2½	Inches. 0.000	Inches. 0.000
	40	.....	2.635	5.270	7.905	10.540	13.175	15.810	5	.002	.002
	45	.....	2.633	5.266	7.900	10.533	13.166	15.799	7½	.004	.004
	50	.....	2.631	5.263	7.894	10.526	13.157	15.788	10	.007	.007
	55	.....	2.630	5.259	7.889	10.518	13.148	15.777	12½	.010	.010
									15	.015	.015
26	00	.....	2.628	5.256	7.883	10.511	13.139	15.766			
	05	5.816	2.626	5.252	7.878	10.504	13.129	15.755			
	10	11.631	2.624	5.248	7.872	10.496	13.120	15.744			
	15	17.447	2.622	5.244	7.866	10.489	13.111	15.733		27°	
	20	23.262	2.620	5.241	7.861	10.481	13.101	15.721			
	25	29.078	2.618	5.237	7.855	10.473	13.092	15.710			
	30	34.893	2.617	5.233	7.849	10.466	13.082	15.699			
	35	.....	2.615	5.229	7.844	10.458	13.073	15.688	2½	Inches. 0.000	
	40	.....	2.613	5.225	7.838	10.451	13.064	15.678	5	.002	
	45	.....	2.611	5.222	7.833	10.443	13.054	15.665	7½	.004	
	50	.....	2.609	5.218	7.827	10.436	13.045	15.654	10	.007	
	55	.....	2.607	5.214	7.821	10.428	13.035	15.642	12½	.011	
									15	.015	
27	00	.....	2.605	5.210	7.816	10.421	13.026	15.631			
	05	5.816	2.603	5.207	7.810	10.413	13.016	15.620			
	10	11.633	2.601	5.203	7.804	10.405	13.006	15.608			
	15	17.449	2.599	5.199	7.798	10.397	12.997	15.596		27°	28°
	20	23.265	2.597	5.195	7.792	10.389	12.987	15.584			
	25	29.082	2.595	5.191	7.786	10.382	12.977	15.572			
	30	34.898	2.593	5.187	7.780	10.374	12.967	15.561			
	35	.....	2.591	5.183	7.774	10.366	12.957	15.549	2½	Inches. 0.000	Inches. 0.000
	40	.....	2.590	5.179	7.769	10.358	12.948	15.537	5	.002	.002
	45	.....	2.588	5.175	7.763	10.350	12.938	15.525	7½	.004	.004
	50	.....	2.586	5.171	7.757	10.342	12.928	15.514	10	.007	.007
	55	.....	2.584	5.167	7.751	10.335	12.918	15.502	12½	.011	.011
									15	.015	.016
28	00	.....	2.582	5.163	7.745	10.327	12.908	15.490			
	05	5.817	2.580	5.159	7.739	10.319	12.898	15.478			
	10	11.634	2.578	5.155	7.733	10.311	12.888	15.466			
	15	17.451	2.576	5.151	7.727	10.303	12.878	15.454		29°	
	20	23.268	2.574	5.147	7.721	10.294	12.868	15.442			
	25	29.085	2.572	5.143	7.715	10.286	12.858	15.430			
	30	34.903	2.570	5.139	7.709	10.278	12.848	15.418			
	35	.....	2.568	5.135	7.703	10.270	12.838	15.405			
	40	.....	2.566	5.131	7.697	10.262	12.828	15.393	2½	Inches. 0.000	
	45	.....	2.564	5.127	7.691	10.254	12.818	15.381	5	.002	
	50	.....	2.562	5.123	7.685	10.246	12.808	15.369	7½	.004	
	55	.....	2.560	5.119	7.679	10.238	12.798	15.357	10	.007	
									12½	.011	
29	00	.....	2.558	5.115	7.673	10.230	12.788	15.345	15	.016	

TABLE 8.—Coordinates for projection of maps (scale 1:111,000)—Continued.

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		2½' longitude.	5' longitude.	7½' longitude.	10' longitude.	12½' longitude.	15' longitude.	Longitude interval.	29°	30°
29 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
05	5.818	2.558	5.115	7.673	10.230	12.788	15.345			
10	11.636	2.555	5.111	7.668	10.222	12.777	15.333			
15	17.454	2.553	5.107	7.660	10.213	12.767	15.320			
20	23.272	2.551	5.103	7.654	10.205	12.756	15.306			
25	29.090	2.549	5.098	7.648	10.197	12.746	15.296			
30	34.908	2.547	5.094	7.641	10.188	12.735	15.283			
35		2.545	5.090	7.635	10.180	12.725	15.270			
40		2.543	5.086	7.629	10.172	12.715	15.258			
45		2.541	5.082	7.623	10.164	12.704	15.245			
50		2.539	5.078	7.616	10.156	12.694	15.233			
55		2.537	5.073	7.610	10.147	12.684	15.220			
		2.535	5.069	7.604	10.138	12.673	15.208			
30 00		2.533	5.065	7.598	10.130	12.663	15.195			
05	5.819	2.530	5.061	7.591	10.122	12.652	15.182			
10	11.638	2.528	5.057	7.585	10.113	12.641	15.169			
15	17.457	2.526	5.052	7.578	10.104	12.630	15.157			
20	23.276	2.524	5.048	7.572	10.096	12.620	15.144			
25	29.095	2.522	5.044	7.565	10.087	12.609	15.131			
30	34.913	2.520	5.039	7.559	10.079	12.598	15.118			
35		2.518	5.035	7.552	10.070	12.587	15.106			
40		2.516	5.031	7.546	10.061	12.577	15.092			
45		2.513	5.026	7.540	10.053	12.566	15.079			
50		2.511	5.022	7.533	10.044	12.555	15.066			
55		2.509	5.018	7.527	10.036	12.544	15.053			
31 00		2.507	5.014	7.520	10.027	12.534	15.040			
05	5.820	2.505	5.009	7.514	10.018	12.523	15.027			
10	11.640	2.502	5.005	7.507	10.009	12.512	15.014			
15	17.460	2.500	5.000	7.500	10.000	12.500	15.000			
20	23.280	2.498	4.996	7.494	9.992	12.489	14.987			
25	29.100	2.496	4.991	7.487	9.983	12.478	14.974			
30	34.919	2.494	4.987	7.480	9.974	12.467	14.961			
35		2.491	4.983	7.474	9.965	12.456	14.948			
40		2.489	4.979	7.467	9.956	12.445	14.934			
45		2.487	4.974	7.460	9.947	12.434	14.921			
50		2.485	4.969	7.454	9.938	12.423	14.908			
55		2.482	4.965	7.447	9.930	12.412	14.894			
32 00		2.480	4.960	7.441	9.921	12.401	14.881			
05	5.821	2.478	4.956	7.434	9.912	12.390	14.868			
10	11.642	2.476	4.951	7.427	9.903	12.378	14.854			
15	17.462	2.473	4.947	7.420	9.894	12.367	14.840			
20	23.283	2.471	4.942	7.413	9.884	12.356	14.827			
25	29.104	2.469	4.938	7.407	9.875	12.344	14.813			
30	34.925	2.467	4.933	7.400	9.866	12.333	14.800			
35		2.464	4.929	7.393	9.857	12.322	14.786			
40		2.462	4.924	7.386	9.848	12.310	14.772			
45		2.460	4.920	7.379	9.839	12.299	14.759			
50		2.458	4.915	7.372	9.831	12.287	14.745			
55		2.455	4.910	7.366	9.821	12.276	14.731			
33 00		2.453	4.906	7.359	9.812	12.265	14.718			

TABLE 8.—Coordinates for projection of maps (scale 1:100,000)—Continued.

[From Smithsonian Geographical Tables.]

Lat- tude of parallel	Meridio- nal dis- tances from even degree parallels	Abcissas of developed parallel,						Ordinates of developed parallel.		
		2½' longi- tude.	5' longi- tude.	7½' longi- tude.	10' longi- tude.	12½' lon- gitude.	15' longi- tude.	Longi- tude inter- val	33°	34°
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>			
33 00	.....	2.453	4.906	7.359	9.812	12.265	14.718			
05	5.822	2.451	4.901	7.352	9.802	12.253	14.704			
10	11.643	2.448	4.897	7.345	9.793	12.241	14.690			
15	17.465	2.446	4.892	7.338	9.784	12.230	14.676			
20	23.287	2.444	4.887	7.331	9.774	12.218	14.662			
25	29.109	2.441	4.882	7.324	9.765	12.206	14.648			
30	34.930	2.439	4.878	7.317	9.756	12.195	14.633	2½'	<i>Inches.</i>	<i>Inches.</i>
35	.....	2.437	4.873	7.310	9.746	12.183	14.619		0.000	0.000
40	.....	2.434	4.868	7.303	9.737	12.171	14.606		.002	.002
45	.....	2.432	4.864	7.296	9.728	12.160	14.591		.004	.004
50	.....	2.430	4.859	7.289	9.718	12.148	14.577		.006	.006
55	.....	2.427	4.854	7.282	9.709	12.136	14.563		.012	.012
								12½'	.017	.018
								15'		
34 00	.....	2.425	4.850	7.275	9.700	12.124	14.549		35°	
05	5.823	2.423	4.845	7.267	9.690	12.112	14.535			
10	11.645	2.420	4.840	7.260	9.680	12.100	14.520			
15	17.468	2.418	4.835	7.253	9.671	12.088	14.506			
20	23.291	2.415	4.831	7.246	9.661	12.076	14.492			
25	29.113	2.413	4.826	7.239	9.652	12.064	14.477			
30	34.936	2.411	4.821	7.231	9.642	12.052	14.463	2½'	<i>Inches.</i>	
35	.....	2.408	4.816	7.224	9.632	12.040	14.448		0.000	
40	.....	2.406	4.811	7.217	9.623	12.028	14.434		.002	
45	.....	2.403	4.807	7.210	9.613	12.016	14.420		.004	
50	.....	2.401	4.802	7.203	9.604	12.004	14.406		.006	
55	.....	2.399	4.797	7.196	9.594	11.992	14.391		.012	
								12½'	.018	
								15'		
35 00	.....	2.396	4.792	7.188	9.584	11.980	14.376		36°	
05	5.824	2.394	4.787	7.181	9.574	11.968	14.362			
10	11.647	2.391	4.782	7.174	9.565	11.956	14.347			
15	17.471	2.389	4.777	7.166	9.555	11.944	14.332			
20	23.294	2.386	4.773	7.159	9.545	11.931	14.318			
25	29.118	2.384	4.768	7.151	9.535	11.919	14.303			
30	34.942	2.381	4.763	7.144	9.525	11.907	14.288	2½'	<i>Inches.</i>	<i>Inches.</i>
35	.....	2.379	4.758	7.137	9.516	11.895	14.273		0.000	0.001
40	.....	2.376	4.753	7.129	9.506	11.882	14.259		.002	.002
45	.....	2.374	4.748	7.122	9.496	11.870	14.244		.004	.005
50	.....	2.372	4.743	7.115	9.486	11.858	14.229		.006	.008
55	.....	2.369	4.738	7.107	9.476	11.845	14.214		.012	.013
								12½'	.018	
								15'		
36 00	.....	2.367	4.733	7.100	9.466	11.833	14.200		37°	
05	5.824	2.364	4.728	7.092	9.456	11.820	14.185			
10	11.649	2.362	4.723	7.085	9.446	11.808	14.169			
15	17.473	2.359	4.718	7.077	9.436	11.795	14.154			
20	23.297	2.357	4.713	7.070	9.426	11.783	14.139			
25	29.122	2.354	4.708	7.062	9.416	11.770	14.124			
30	34.946	2.352	4.703	7.055	9.406	11.758	14.109	2½'	<i>Inches.</i>	
35	.....	2.349	4.698	7.047	9.396	11.745	14.094		0.001	
40	.....	2.346	4.693	7.039	9.386	11.732	14.079		.002	
45	.....	2.344	4.688	7.032	9.376	11.720	14.064		.004	
50	.....	2.341	4.683	7.024	9.366	11.707	14.048		.006	
55	.....	2.339	4.678	7.017	9.356	11.694	14.033		.012	
								12½'	.018	
								15'		
37 00	.....	2.336	4.673	7.009	9.346	11.682	14.018			

TABLE 8.—Coordinates for projection of maps (scale  $\frac{1}{81456}$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		2½' longitude.	5' longitude.	7½' longitude.	10' longitude.	12½' longitude.	15' longitude.	Longitude interval.	27°	33°
27 00	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.			
05	5.828	2.336	4.673	7.009	9.345	11.682	14.018	24	Inches.	Inches.
10	11.651	2.334	4.667	7.001	9.335	11.669	14.003			
15	17.477	2.331	4.662	6.994	9.325	11.656	13.987			
20	23.302	2.328	4.657	6.986	9.314	11.643	13.972			
25	29.128	2.326	4.652	6.978	9.304	11.630	13.956			
30	34.954	2.323	4.647	6.970	9.294	11.617	13.941			
35		2.321	4.642	6.963	9.283	11.604	13.925	5	0.001	0.001
40		2.318	4.637	6.956	9.273	11.591	13.910	7½	.002	.002
45		2.316	4.631	6.947	9.263	11.578	13.894	10	.005	.005
50		2.313	4.626	6.939	9.253	11.566	13.879	12½	.008	.008
55		2.311	4.621	6.932	9.242	11.553	13.863	15	.013	.013
60		2.308	4.616	6.924	9.232	11.540	13.848			
28 00		2.306	4.611	6.916	9.222	11.527	13.832	24	Inches.	Inches.
05	5.827	2.303	4.606	6.908	9.211	11.514	13.817			
10	11.653	2.300	4.600	6.900	9.201	11.501	13.801			
15	17.480	2.298	4.595	6.892	9.190	11.488	13.785			
20	23.306	2.296	4.590	6.885	9.179	11.474	13.769			
25	29.133	2.293	4.584	6.877	9.169	11.461	13.753			
30	34.960	2.290	4.579	6.869	9.158	11.448	13.737	5	0.001	0.001
35		2.287	4.574	6.861	9.148	11.435	13.722	7½	.002	.002
40		2.284	4.569	6.853	9.137	11.422	13.706	10	.005	.005
45		2.282	4.563	6.845	9.127	11.409	13.690	12½	.008	.008
50		2.279	4.558	6.837	9.116	11.396	13.674	15	.013	.013
55		2.276	4.553	6.829	9.106	11.382	13.658			
30 00		2.274	4.547	6.821	9.096	11.369	13.642	24	Inches.	Inches.
05	5.828	2.271	4.542	6.813	9.084	11.355	13.626			
10	11.655	2.268	4.537	6.805	9.073	11.342	13.610			
15	17.483	2.266	4.531	6.797	9.063	11.329	13.594			
20	23.310	2.263	4.526	6.789	9.052	11.315	13.578			
25	29.138	2.260	4.521	6.781	9.041	11.301	13.562			
30	34.966	2.258	4.515	6.773	9.030	11.288	13.545	5	0.001	0.001
35		2.255	4.510	6.765	9.020	11.274	13.529	7½	.002	.002
40		2.252	4.504	6.757	9.009	11.261	13.513	10	.005	.005
45		2.250	4.499	6.748	8.998	11.247	13.497	12½	.008	.008
50		2.247	4.494	6.740	8.987	11.234	13.481	15	.013	.013
55		2.244	4.488	6.732	8.976	11.221	13.465			
40 00		2.241	4.483	6.724	8.966	11.207	13.448	24	Inches.	Inches.
05	5.829	2.239	4.477	6.716	8.955	11.193	13.432			
10	11.657	2.236	4.472	6.708	8.944	11.180	13.415			
15	17.486	2.233	4.466	6.699	8.933	11.166	13.399			
20	23.314	2.230	4.461	6.691	8.922	11.152	13.382			
25	29.143	2.228	4.455	6.683	8.911	11.138	13.366			
30	34.972	2.225	4.450	6.675	8.899	11.124	13.349	5	0.001	0.001
35		2.222	4.444	6.666	8.888	11.111	13.333	7½	.002	.002
40		2.219	4.439	6.658	8.877	11.097	13.316	10	.005	.005
45		2.217	4.433	6.650	8.866	11.083	13.300	12½	.008	.008
50		2.214	4.428	6.642	8.855	11.069	13.283	15	.013	.013
55		2.211	4.422	6.633	8.844	11.056	13.267			
41 00		2.208	4.417	6.625	8.833	11.042	13.250			

TABLE 8.—*Coordinates for projection of maps (scale  $\frac{1}{111,320}$ )—Continued.*

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abscissas of developed parallel.						Ordinates of developed parallel.		
		24' longitude.	5' longitude.	74' longitude.	10' longitude.	124' longitude.	15' longitude.			
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longitude interval.	41°	42°
41 00	—	2.204	4.417	6.625	8.833	11.042	13.250			
05	5.830	2.206	4.413	6.617	8.822	11.028	13.233			
10	11.659	2.203	4.406	6.608	8.811	11.014	13.216			
15	17.489	2.200	4.400	6.600	8.800	11.000	13.200			
20	23.319	2.197	4.394	6.591	8.789	10.986	13.183			
25	29.149	2.194	4.389	6.583	8.777	10.972	13.166			
30	34.978	2.192	4.383	6.575	8.766	10.958	13.149			
35	—	2.189	4.377	6.566	8.755	10.944	13.132	24	Inches. 0.001	Inches. 0.001
40	—	2.186	4.372	6.558	8.744	10.930	13.115	5	.002	.002
45	—	2.183	4.366	6.549	8.732	10.916	13.099	74	.005	.005
50	—	2.180	4.361	6.541	8.721	10.902	13.082	10	.006	.006
55	—	2.178	4.355	6.533	8.710	10.888	13.065	124	.013	.013
	—							15	.019	.019
42 00	—	2.175	4.349	6.524	8.699	10.873	13.048			
05	5.831	2.172	4.344	6.515	8.687	10.859	13.031			
10	11.661	2.169	4.338	6.507	8.676	10.845	13.014		43°	
15	17.492	2.166	4.332	6.498	8.664	10.830	12.996			
20	23.323	2.163	4.326	6.490	8.653	10.816	12.979			
25	29.154	2.160	4.321	6.481	8.641	10.802	12.962			
30	34.984	2.158	4.315	6.472	8.630	10.787	12.945	24	Inches. 0.001	
35	—	2.155	4.309	6.464	8.618	10.773	12.928	5	.002	
40	—	2.152	4.304	6.455	8.607	10.759	12.910	74	.005	
45	—	2.149	4.298	6.447	8.596	10.744	12.893	10	.006	
50	—	2.146	4.292	6.438	8.584	10.730	12.876	124	.013	
55	—	2.143	4.286	6.429	8.573	10.716	12.859	15	.019	
43 00	—	2.140	4.281	6.421	8.561	10.701	12.842			
05	5.832	2.137	4.275	6.412	8.550	10.687	12.824			
10	11.663	2.134	4.269	6.403	8.538	10.672	12.807			
15	17.495	2.132	4.263	6.395	8.526	10.658	12.789		43°	44°
20	23.327	2.129	4.257	6.386	8.514	10.643	12.772			
25	29.159	2.126	4.251	6.377	8.503	10.628	12.754			
30	34.990	2.123	4.246	6.368	8.491	10.614	12.736			
35	—	2.120	4.240	6.359	8.479	10.599	12.719			
40	—	2.117	4.234	6.351	8.468	10.585	12.701	24	Inches. 0.001	Inches. 0.001
45	—	2.114	4.228	6.342	8.456	10.570	12.684	5	.002	.002
50	—	2.111	4.222	6.333	8.444	10.555	12.666	74	.005	.005
55	—	2.108	4.216	6.324	8.432	10.541	12.649	10	.006	.006
	—							124	.013	.013
	—							15	.019	.019
44 00	—	2.105	4.210	6.316	8.421	10.526	12.631			
05	5.833	2.102	4.205	6.307	8.409	10.511	12.613			
10	11.666	2.099	4.199	6.298	8.397	10.496	12.596			
15	17.498	2.096	4.193	6.289	8.385	10.482	12.578			
20	23.331	2.093	4.187	6.280	8.373	10.467	12.560		45°	
25	29.161	2.090	4.181	6.271	8.361	10.452	12.542			
30	34.997	2.087	4.175	6.262	8.350	10.437	12.524			
35	—	2.084	4.169	6.253	8.338	10.422	12.506			
40	—	2.081	4.163	6.244	8.326	10.407	12.489	24	Inches. 0.001	
45	—	2.078	4.157	6.235	8.314	10.392	12.471	5	.002	
50	—	2.076	4.151	6.227	8.302	10.377	12.453	74	.005	
55	—	2.073	4.145	6.218	8.290	10.363	12.435	10	.006	
	—							124	.013	
	—							15	.019	
45 00	—	2.070	4.139	6.209	8.278	10.348	12.417			



TABLE 8.—Coordinates for projection of maps (scale  $\pi:1$ )—Continued.

[From Smithsonian Geographical Tables.]

Latitude of parallel.	Meridional distances from even degree parallels.	Abcissas of developed parallel.						Ordinates of developed parallel.		
		2½' longitude.	5' longitude.	7½' longitude.	10' longitude.	12½' longitude.	15' longitude.			
°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Longitude interval.	45°	46°
45 00	.....	2.070	4.139	6.209	8.278	10.348	12.417			
05	5.834	2.067	4.133	6.200	8.266	10.333	12.399			
10	11.668	2.064	4.127	6.191	8.254	10.318	12.381			
15	17.501	2.061	4.121	6.181	8.242	10.302	12.363			
20	23.335	2.058	4.115	6.172	8.230	10.287	12.345			
25	29.169	2.054	4.109	6.163	8.218	10.272	12.327			
30	35.003	2.051	4.103	6.154	8.206	10.257	12.308			
35	.....	2.048	4.097	6.145	8.194	10.242	12.290	2½	Inches.	Inches.
40	.....	2.045	4.091	6.136	8.181	10.227	12.272	5	.001	.001
45	.....	2.042	4.085	6.127	8.169	10.212	12.254	7½	.002	.002
50	.....	2.039	4.079	6.118	8.157	10.197	12.236	10	.005	.005
55	.....	2.036	4.073	6.109	8.145	10.182	12.218	12½	.009	.009
								15	.013	.013
									.019	.019
46 00	.....	2.033	4.067	6.100	8.133	10.166	12.200			
05	5.836	2.030	4.060	6.091	8.121	10.151	12.181			
10	11.670	2.027	4.054	6.081	8.108	10.136	12.163		47°	
15	17.504	2.024	4.048	6.072	8.096	10.120	12.144			
20	23.339	2.021	4.042	6.063	8.084	10.105	12.126			
25	29.174	2.018	4.036	6.054	8.072	10.090	12.107			
30	35.009	2.015	4.030	6.044	8.059	10.074	12.089			
35	.....	2.012	4.023	6.035	8.047	10.059	12.070	2½	Inches.	
40	.....	2.009	4.017	6.026	8.035	10.043	12.052	5	0.001	
45	.....	2.006	4.011	6.017	8.022	10.028	12.033	7½	.002	
50	.....	2.003	4.005	6.008	8.010	10.013	12.015	10	.005	
55	.....	1.999	3.999	5.996	7.996	9.997	11.996	12½	.008	
								15	.013	
									.019	
47 00	.....	1.996	3.993	5.989	7.985	9.982	11.976			
05	5.838	1.993	3.986	5.980	7.973	9.966	11.959	Longitude interval.	47°	48°
10	11.672	1.990	3.980	5.970	7.960	9.960	11.940			
15	17.506	1.987	3.974	5.961	7.948	9.935	11.922			
20	23.344	1.984	3.968	5.951	7.935	9.919	11.903			
25	29.180	1.981	3.961	5.942	7.923	9.903	11.884			
30	35.015	1.977	3.955	5.933	7.910	9.888	11.865			
35	.....	1.974	3.949	5.923	7.898	9.872	11.846			
40	.....	1.971	3.943	5.914	7.885	9.856	11.828	2½	Inches.	Inches.
45	.....	1.968	3.936	5.904	7.872	9.841	11.809	5	0.001	0.001
50	.....	1.965	3.930	5.895	7.860	9.825	11.790	7½	.002	.002
55	.....	1.962	3.924	5.886	7.848	9.809	11.771	10	.005	.005
								12½	.008	.008
								15	.013	.013
									.019	.019
48 00	.....	1.959	3.917	5.876	7.835	9.794	11.752			
05	5.837	1.956	3.911	5.867	7.822	9.778	11.733			
10	11.674	1.952	3.905	5.857	7.810	9.763	11.714			
15	17.511	1.949	3.898	5.848	7.797	9.746	11.695		49°	
20	23.348	1.946	3.892	5.838	7.784	9.730	11.676			
25	29.185	1.943	3.886	5.829	7.771	9.714	11.657			
30	35.021	1.940	3.879	5.819	7.759	9.698	11.638			
35	.....	1.937	3.873	5.810	7.746	9.683	11.619			
40	.....	1.933	3.867	5.800	7.733	9.667	11.600	2½	Inches.	
45	.....	1.930	3.860	5.790	7.721	9.651	11.581	5	0.001	
50	.....	1.927	3.854	5.781	7.708	9.635	11.562	7½	.002	
55	.....	1.924	3.848	5.771	7.695	9.619	11.543	10	.005	
								12½	.008	
								15	.013	
									.019	
49 00	.....	1.921	3.841	5.762	7.682	9.603	11.524			
05	5.838	1.917	3.835	5.752	7.670	9.587	11.504			
10	11.676	1.914	3.828	5.742	7.657	9.571	11.485			
15	17.514	1.911	3.822	5.733	7.644	9.555	11.466		49°	50°
20	23.352	1.908	3.815	5.723	7.631	9.538	11.446			
25	29.190	1.905	3.809	5.713	7.618	9.522	11.427			
30	35.027	1.901	3.802	5.704	7.605	9.506	11.407			
35	.....	1.898	3.796	5.694	7.592	9.490	11.388			
40	.....	1.895	3.790	5.684	7.579	9.474	11.369	2½	Inches.	Inches.
45	.....	1.892	3.783	5.675	7.566	9.458	11.349	5	0.001	0.001
50	.....	1.888	3.777	5.665	7.553	9.442	11.330	7½	.002	.002
55	.....	1.885	3.770	5.655	7.540	9.426	11.311	10	.005	.005
								12½	.008	.008
								15	.013	.013
									.019	.019
50 00	.....	1.882	3.764	5.646	7.528	9.409	11.291			

TABLE 9.—Coordinates for projection of maps (scale 1:500,000).

[Prepared by S. S. Gannett.]

Latitude of parallel.	Abscissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
26 00	Inches. 7.300	Inches. 10.949	Inches. 14.599	Inches. 21.899	5	.002
05	.294	.941	.589	.883	7½	.005
07½	.292	.937	.583	.875	10	.009
10	.389	.933	.578	.867	15	.021
15	.284	.926	.568	.852		
20	7.279	10.918	14.557	21.836	Latitude interval.	Meridional distance.
22½	.276	.914	.552	.828		
25	.273	.910	.547	.820	'	Inches.
30	.268	.902	.537	.805	1	1.615
35	7.263	10.894	14.526	21.789	2	3.231
37½	.260	.890	.521	.781	3	4.846
40	.258	.886	.515	.773	4	6.461
45	.252	.878	.505	.757	5	8.077
50	7.247	10.871	14.495	21.742	6	9.692
52½	.245	.867	.489	.734	7	11.308
55	.242	.863	.484	.726	8	12.924
60	.237	.855	.473	.710	9	14.539
27 00	7.237	10.855	14.473	21.710	10	16.154
05	.231	.847	.463	.694	Longitude interval.	Inch.
07½	.229	.843	.457	.686		
10	.226	.839	.452	.678	'	
15	.221	.831	.442	.662	5	.003
20	7.215	10.822	14.430	21.645	7½	.005
22½	.212	.818	.425	.637	10	.010
25	.209	.814	.419	.628	15	.022
30	.204	.806	.408	.612		
35	7.199	10.798	14.397	21.596	Latitude interval.	Meridional distance.
37½	.196	.793	.392	.587		
40	.193	.789	.386	.579	'	Inches.
45	.188	.781	.375	.563	1	1.616
50	7.182	10.774	14.365	21.547	2	3.232
52½	.180	.769	.359	.539	3	4.847
55	.177	.765	.354	.531	4	6.463
60	.171	.757	.343	.514	5	8.078
28 00	7.171	10.757	14.343	21.514	6	9.694
05	.166	.749	.332	.498	7	11.310
07½	.163	.744	.326	.489	8	12.925
10	.160	.740	.321	.481	9	14.541
15	.155	.732	.309	.464	10	16.157
20	7.149	10.724	14.299	21.448	Longitude interval.	Inch.
22½	.147	.720	.293	.440		
25	.144	.715	.287	.431	'	
30	.138	.707	.276	.414	5	.003
35	7.132	10.698	14.265	21.397	7½	.005
37½	.129	.694	.259	.388	10	.010
40	.127	.690	.253	.380	15	.022
45	.121	.681	.242	.363		
50	7.116	10.673	14.231	21.347	Latitude interval.	Meridional distance.
52½	.113	.669	.225	.338		
55	.110	.665	.220	.330	'	Inches.
60	.104	.656	.209	.213	1	1.616
					2	3.232
					3	4.848
					4	6.464
					5	8.079
					6	9.695
					7	11.311
					8	12.927
					9	14.543
					10	16.159

TABLE 9.—Coordinates for projection of maps (scale 1:500,000).—Continued.

Latitude of parallel.		Abacissas of developed parallel.				Ordinates of developed parallel.	
		Longitude Interval.				Longitude interval.	Inch.
		5'	7½'	10'	15'		
		Inches.	Inches.	Inches.	Inches.		
29	00	7.104	10.656	14.209	21.313	5	.008
	05	.099	.648	.197	.290	7½	.006
	07½	.096	.643	.191	.287	10	.010
	10	.093	.639	.185	.278	15	.023
	15	.087	.630	.174	.261		
20		7.081	10.621	14.162	21.243	Latitude interval	Meridional distance.
22½		.078	.617	.156	.224		
25		.075	.613	.151	.226		
30		.070	.604	.140	.209		
35		7.064	10.596	14.126	21.192		
37½		.061	.591	.122	.183	1	1.616
40		.058	.587	.116	.174	2	3.232
45		.052	.578	.105	.167	3	4.848
						4	6.464
						5	8.081
						6	9.697
						7	11.313
						8	12.929
50		7.046	10.569	14.083	21.139	9	14.545
52½		.043	.565	.087	.130	10	16.161
55		.041	.561	.081	.122		
60		.035	.552	.069	.104	Longitude interval.	Inch.
30	00	7.036	10.562	14.069	21.104		
	05	.029	.543	.057	.086	5	.008
	07½	.026	.538	.051	.077	7½	.006
	10	.023	.534	.045	.068	10	.010
	15	.017	.525	.035	.051	15	.023
20		7.011	10.516	14.022	21.033	Latitude interval	Meridional distance.
22½		.008	.512	.016	.024		
25		.005	.507	.010	.015		
30		6.999	.499	.000	20.998		
35		6.983	10.490	13.987	20.980		
37½		.980	.485	.981	.971	1	1.616
40		.987	.481	.975	.962	2	3.233
45		.982	.472	.963	.945	3	4.849
						4	6.465
						5	8.082
						6	9.698
						7	11.314
50		6.976	10.463	13.961	20.927	8	12.931
52½		.973	.459	.945	.918	9	14.547
55		.970	.454	.939	.909	10	16.163
60		.963	.445	.927	.890		
31	00	6.963	10.445	13.927	20.890	Longitude interval.	Inch.
	05	.967	.436	.915	.872		
	07½	.964	.431	.908	.862	5	.008
	10	.951	.426	.902	.855	7½	.006
	15	.945	.417	.890	.835	10	.011
20		6.939	10.408	13.878	20.817	15	.024
22½		.936	.404	.872	.808	Latitude interval	Meridional distance.
25		.933	.399	.866	.798		
30		.927	.390	.853	.780		
35		6.920	10.380	13.841	20.761		
37½		.917	.376	.835	.752		
40		.915	.372	.829	.744	2	3.233
45		.908	.362	.817	.725	3	4.850
						4	6.467
						5	8.083
						6	9.700
						7	11.317
50		6.902	10.353	13.804	20.706	8	12.932
52½		.899	.348	.797	.696	9	14.549
55		.896	.344	.792	.688	10	16.166
60		.890	.334	.779	.669		

TABLE 9.—Coordinates for projection of maps (scale 1:500,000)—Continued.

Latitude of parallel.	Abscissas of developed parallel.				Ordinate* of developed parallel.	
	Longitude interval				Longitude interval.	Inch.
	5'	7½'	10'	15'		
32						
00	6.890	10.334	13.779	20.669	5	.003
05	.883	.325	.767	.650	7½	.006
07½	.890	.320	.760	.640	10	.011
10	.877	.315	.754	.631	15	.024
15	.871	.306	.742	.612		
					Latitude interval	*Meridional distance.
20	6.864	10.296	13.729	20.593		Inches.
22½	.861	.291	.722	.583	1	1.617
25	.854	.287	.716	.574	2	3.234
30	.852	.277	.703	.555	3	4.851
					4	6.468
35	6.845	10.269	13.691	20.536	5	8.085
37½	.842	.263	.694	.526	6	9.702
40	.839	.258	.678	.517	7	11.319
45	.833	.249	.665	.498	8	12.935
					9	14.552
50	6.828	10.239	13.653	20.479	10	16.169
52½	.823	.234	.646	.469		
55	.820	.230	.640	.460	Longitude interval.	Inch.
60	.814	.220	.627	.441		
33						
00	6.814	10.220	13.627	20.441	5	.003
05	.807	.210	.614	.421	7½	.006
07½	.804	.205	.607	.411	10	.011
10	.801	.201	.601	.402	15	.024
15	.794	.191	.588	.382		
					Latitude interval	*Meridional distance.
20	6.788	10.181	13.575	20.383		Inches.
22½	.784	.176	.569	.353	1	1.617
25	.781	.171	.562	.343	2	3.234
30	.775	.162	.549	.324	3	4.852
					4	6.469
35	6.769	10.152	13.536	20.304	5	8.086
37½	.765	.147	.529	.294	6	9.703
40	.762	.142	.523	.285	7	11.321
45	.755	.132	.510	.265	8	12.938
					9	14.555
50	6.749	10.123	13.497	20.246	10	16.172
52½	.745	.118	.491	.236		
55	.742	.113	.484	.226	Longitude interval.	Inch.
60	.736	.103	.471	.207		
34						
00	6.736	10.103	13.471	20.207	5	.003
05	.729	.093	.458	.187	7½	.006
07½	.726	.088	.451	.177	10	.011
10	.722	.083	.445	.167	15	.025
15	.716	.073	.431	.147		
					Latitude interval	*Meridional distance.
20	6.709	10.063	13.418	20.127		Inches.
22½	.706	.068	.411	.117	1	1.617
25	.702	.053	.405	.107	2	3.235
30	.696	.013	.391	.087	3	4.852
					4	6.469
35	6.689	10.033	13.378	20.067	5	8.087
37½	.686	.028	.371	.057	6	9.705
40	.682	.023	.365	.047	7	11.322
45	.676	.013	.351	.027	8	12.939
					9	14.557
50	6.669	10.003	13.338	20.007	10	16.174
52½	.666	.998	.331	.197		
55	.662	.993	.325	.187		
60	.656	.983	.311	.167		

TABLE 9.—Coordinates for projection of maps (scale, 1:100,000)—Continued.

Latitude of parallel.		Abcissas of developed parallel.				Ordinates of developed parallel.	
		Longitude interval.				Longitude interval.	Inch.
		5'	7½'	10'	15'		
°	'	Inches.	Inches.	Inches.	Inches.	'	
25	00	6.656	9.983	13.311	19.967	5	.008
	05	.649		.298	.947	7½	.006
	07½	.645	.968	.291	.936	10	.011
	10	.642	.963	.284	.926	15	.025
	15	.635	.958	.271	.908		
	20	6.628	9.942	13.257	19.885	Latitude interval.	Meridional distance.
	22½	.625	.937	.260	.875		Inches.
	25	.622	.932	.243	.866	1	1.618
	30	.615	.922	.230	.845	2	3.236
	35	6.608	9.912	13.216	19.824	3	4.853
	37½	.605	.907	.209	.814	4	6.471
	40	.601	.902	.208	.804	5	8.090
	45	.594	.891	.189	.783	6	9.708
	50	6.588	9.881	13.175	19.763	7	11.324
	52½	.584	.876	.189	.753	8	12.942
36	55	.581	.871	.161	.742	9	14.560
	60	.574	.861	.148	.722	10	16.178
	00	6.574	9.861	13.148	19.722	Longitude interval.	Inch.
	05	.567	.850	.134	.701		
	07½	.564		.127	.691	5	.008
	10	.560	.840	.120	.680	7½	.006
	15	.553	.829	.106	.659	10	.011
	20	6.546	9.819	13.092	19.638	15	.025
	22½	.543	.814	.089	.628	Latitude interval.	Meridional distance.
	25	.539	.808	.078	.617		Inches.
	30	.532	.799	.064	.596	1	1.618
	35	6.525	9.787	13.050	19.575	2	3.236
	37½	.522	.782	.044	.565	3	4.854
	40	.518	.777	.036	.554	4	6.472
	45	.511	.766	.022	.533	5	8.090
37	50	6.504	9.756	13.008	19.512	6	9.708
	52½	.501	.751	.001	.502	7	11.326
	55	.497	.745	12.994	.491	8	12.944
	60	.490	.735	.980	.470	9	14.562
	00	6.490	9.735	12.980	19.470	10	16.180
	05	.483	.724	.965	.448	Longitude interval.	Inch.
	07½	.479	.718	.954	.437		
	10	.476	.713	.951	.427	5	.003
	15	.468	.702	.937	.406	7½	.007
	20	6.461	9.691	12.922	19.383	10	.012
	22½	.458	.686	.915	.373	15	.026
	25	.454	.681	.908	.362	Latitude interval.	Meridional distance.
	30	.447	.670	.893	.340		Inches.
	35	6.440	9.659	12.879	19.319	1	1.618
	37½	.436	.654	.872	.308	2	3.236
38	40	.433	.649	.865	.298	3	4.855
	45	.425	.638	.851	.276	4	6.473
	50	6.418	9.627	12.836	19.254	5	8.091
	52½	.415	.622	.829	.244	6	9.709
	55	.411	.616	.822	.233	7	11.328
	60	.404	.605	.808	.211	8	12.946
						9	14.564
						10	16.182

TABLE 9.—*Coordinates for projection of maps (scale 45688)*—Continued.

Latitude of parallel	Abacisms of developed parallel.				Ordinates of developed parallel	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
°	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
38 00	6.404	9.606	12.808	19.211	5	.003
05	.396	.594	.792	.189	7½	.007
07½	.393	.589	.786	.178	10	.012
10	.389	.584	.778	.168	15	.026
15	.382	.573	.764	.146		
					Latitude interval.	Meridional distance.
20	6.376	9.562	12.750	19.124		<i>Inches.</i>
22½	.371	.556	.742	.112	1	1.619
25	.367	.551	.734	.102	2	3.237
30	.360	.540	.720	.080	3	4.856
					4	6.475
35	6.353	9.529	12.706	19.058	5	8.093
37½	.349	.523	.696	.047	6	9.712
40	.346	.519	.692	.037	7	11.331
45	.338	.507	.676	.014	8	12.949
					9	14.567
50	6.331	9.496	12.662	18.992	10	16.186
52½	.327	.491	.654	.982		
55	.324	.485	.648	.791	Longitude interval.	Inch.
60	.316	.474	.631	.948		
39 00	6.316	9.474	12.632	18.948		
05	.309	.463	.617	.926	5	.003
07½	.306	.457	.609	.914	7½	.007
10	.301	.451	.602	.903	10	.012
15	.294	.440	.587	.881	15	.026
					Latitude interval.	Meridional distance.
20	6.286	9.429	12.572	18.858		<i>Inches.</i>
22½	.282	.423	.565	.847	1	1.619
25	.279	.418	.557	.836	2	3.237
30	.271	.406	.542	.813	3	4.856
					4	6.475
35	6.264	9.395	12.527	18.791	5	8.094
37½	.260	.389	.520	.780	6	9.712
40	.256	.384	.512	.768	7	11.331
45	.249	.373	.497	.746	8	12.950
					9	14.569
50	6.241	9.361	12.482	18.723	10	16.188
52½	.237	.356	.475	.712		
55	.234	.350	.467	.701	Longitude interval.	Inch.
60	.226	.339	.452	.678		
40 00	6.226	9.339	12.452	18.678		
05	.219	.328	.439	.656	5	.003
07½	.216	.322	.429	.644	7½	.007
10	.211	.316	.422	.633	10	.012
15	.203	.305	.406	.609	15	.026
					Latitude interval.	Meridional distance.
20	6.196	9.293	12.392	18.587		<i>Inches.</i>
22½	.192	.288	.384	.576	1	1.619
25	.188	.282	.376	.564	2	3.238
30	.180	.270	.361	.540	3	4.857
					4	6.476
35	6.173	9.259	12.346	18.518	5	8.096
37½	.169	.258	.338	.506	6	9.714
40	.165	.247	.330	.495	7	11.333
45	.157	.236	.316	.472	8	12.952
					9	14.571
50	6.150	9.224	12.300	18.449	10	16.190
52½	.146	.219	.292	.438		
55	.142	.213	.285	.427		
60	.134	.201	.269	.403		

TABLE 9.—Coordinates for projection of maps (scale 1:157)—Continued.

Latitude of parallel.	Abcissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'	7½'	10'	15'		
41 00	Inches. 6.184	Inches. 9.201	Inches. 12.269	Inches. 18.408	' 5	.008
05	.127	.190	.254	.380	7½	.007
07½	.128	.184	.246	.368	10	.012
10	.119	.178	.233	.356	15	.026
15	.111	.166	.222	.333	Latitude interval.	
20	6.108	9.155	12.206	18.410	Meridional distance.	
22½	.099	.149	.199	.298	' 1	Inches. 1.619
25	.095	.143	.190	.286	2	3.239
30	—	.181	.176	.268	3	4.858
35	6.080	9.119	12.159	18.239	4	6.477
37½	.076	.118	.162	.227	5	8.097
40	.072	.107	.148	.216	6	9.716
45	.064	.096	.128	.192	7	11.335
50	6.056	9.084	12.118	18.169	8	12.955
52½	—	.078	.136	.187	9	14.574
55	.048	.072	.096	.145	10	16.193
60	.041	.061	.061	.122	Longitude interval.	
42 00	6.041	9.361	12.061	18.123	Inch.	
05	.083	.049	.086	.098	' 5	.008
07½	.029	.043	.067	—	7½	.007
10	.026	.037	.060	.074	10	.012
15	.017	.026	.034	—	15	.026
20	6.009	9.018	12.018	18.027	Latitude interval.	
22½	.005	.007	.010	.015	Meridional distance.	
25	.001	.001	.002	.003	' 1	Inches. 1.620
30	6.993	8.989	11.986	17.979	2	3.239
35	5.985	8.978	11.970	17.966	3	4.859
37½	.981	.971	.963	.944	4	6.478
40	.977	.966	.955	.932	5	8.098
45	.969	.954	.939	.908	6	9.718
50	5.961	8.942	11.923	17.884	7	11.337
52½	.957	.936	.915	.872	8	12.957
55	.953	.930	.907	.861	9	14.576
60	.945	.918	.891	.836	10	16.196
43 00	5.945	8.918	11.891	17.836	Longitude interval.	
05	.937	.906	.875	.812	Inch.	
07½	.933	.900	.868	.800	' 5	.008
10	.929	.898	.858	.787	7½	.007
15	.921	.881	.842	.768	10	.012
20	5.918	8.869	11.825	17.788	15	.026
22½	.909	.863	.817	.726	Latitude interval.	
25	.905	.857	.809	.714	Meridional distance.	
30	.898	.844	.793	.689	' 1	Inches. 1.620
35	5.888	8.832	11.777	17.665	2	3.240
37½	.884	.828	.769	.658	3	4.860
40	.880	.820	.760	.640	4	6.480
45	.872	.808	.744	.616	5	8.100
50	5.864	8.796	11.728	17.592	6	9.719
52½	.860	.790	.720	.580	7	11.339
55	.856	.783	.711	.567	8	12.959
60	.848	.771	.696	.543	9	14.579
					10	16.199

TABLE 9.—Coordinates for projection of maps (scale  $\frac{1}{33000}$ )—Continued.

Latitude of parallel.	Abcissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'.	7½'.	10'.	15'.		
44	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
00	5.848	8.771	11.695	17.543	5	.003
05	.839	.759	.679	.518	7½	.007
07½	.835	.753	.670	.505	10	.012
10	.831	.746	.662	.493	15	.027
15	.823	.734	.646	.469		
					Latitude interval.	Meridional distance.
20	5.815	8.722	11.629	17.444		
22½	.810	.715	.621	.431		
25	.806	.709	.613	.419		
30	.798	.697	.596	.394		
					<i>Inches.</i>	
35	5.790	8.685	11.580	17.370	1	1.620
37½	.786	.678	.571	.357	2	3.240
40	.782	.672	.563	.345	3	4.861
45	.773	.660	.547	.320	4	6.481
					5	8.101
					6	9.721
					7	11.341
					8	12.962
					9	14.582
					10	16.202
50	5.765	8.647	11.530	17.295		
52½	.761	.641	.523	.284		
55	.757	.635	.514	.271		
60	.749	.623	.497	.246		
					Longitude interval.	Inch.
45	5.749	8.623	11.497	17.246		
05	.740	.610	.481	.221	5	.003
07½	.736	.604	.472	.208	7½	.007
10	.732	.596	.464	.196	10	.012
15	.724	.586	.447	.171	15	.027
20	5.715	8.578	11.431	17.146	Latitude interval.	Meridional distance.
22½	.711	.567	.429	.134		
25	.707	.560	.414	.121		
30	.699	.548	.397	.096		
					<i>Inches.</i>	
35	5.690	8.535	11.380	17.070	1	1.621
37½	.686	.528	.371	.057	2	3.241
40	.682	.522	.363	.045	3	4.862
45	.673	.510	.347	.020	4	6.483
					5	8.103
					6	9.723
					7	11.345
					8	12.964
					9	14.585
					10	16.206
50	5.665	8.497	11.330	16.995		
52½	.661	.491	.321	.982		
55	.657	.485	.313	.970		
60	.648	.472	.296	.944		
					Longitude interval.	Inch.
46	5.648	8.472	11.296	16.944		
05	.639	.459	.278	.918		
07½	.635	.453	.271	.906		
10	.631	.446	.262	.898	5	.003
15	.622	.433	.245	.867	7½	.007
					10	.012
					15	.027
20	5.614	8.420	11.227	16.841	Latitude interval.	Meridional distance.
22½	.609	.414	.219	.828		
25	.605	.408	.211	.816		
30	.597	.396	.193	.790		
					<i>Inches.</i>	
35	5.588	8.382	11.176	16.764	1	1.621
37½	.584	.376	.167	.751	2	3.242
40	.579	.369	.159	.738	3	4.863
45	.571	.356	.142	.713	4	6.484
					5	8.105
					6	9.725
					7	11.347
					8	12.968
					9	14.589
					10	16.209
50	5.562	8.343	11.125	16.687		
52½	.558	.337	.117	.675		
55	.554	.330	.107	.661		
60	.545	.318	.091	.636		



TABLE 9.—*Coordinates for projection of maps (scale 1:100,000)*—Continued.

Latitude of parallel.	Abcissas of developed parallel.				Ordinates of developed parallel.	
	Longitude interval.				Longitude interval.	Inch.
	5'.	7½'.	10'.	15'.		
47 00	Inches. 5.545	Inches. 8.518	Inches. 11.091	Inches. 16.636	' 5	.009
05	.587	.805	.073	.510	7½	.007
07½	.582	.298	.065	.507	10	.012
10	.528	.292	.056	.564	15	.026
15	.519	.279	.059	.556		
					Latitude interval.	Meridional distance.
20		8.265	11.021	16.581	' 1	1.621
22½	.506	.259	.012	.515	2	3.242
25	.502	.252	.008	.505	3	4.863
30	.493	.239	10.988	.479	4	6.484
					5	8.105
35	5.434	8.226	11.017	16.453	6	9.726
37½	.476	.220	.960	.440	7	11.348
40	.476	.213	.951	.427	8	12.969
45	.467	.200	.934	.401	9	14.590
					10	16.211
50	5.458		10.916	16.374		
52½	.454	.181	.908	.362	Longitude interval.	Inch.
55	.449	.174	.899	.348	' 5	.008
60	.441	.161	.882	.323	7½	.007
					10	.012
48 00	5.441	8.161	10.882	16.323	15	.026
05	.432		.865	.297		
07½	.428	.142	.856	.284	Latitude interval.	Meridional distance.
10	.424	.135	.847	.271	' 1	1.621
15	.415	.122	.830	.245	2	3.242
					3	4.864
20	5.408	8.109	10.811	16.217	4	6.485
22½	.401	.102	.803	.204	5	8.107
25	.397	.095	.794	.191	6	9.728
30	.388	.082	.777	.165	7	11.349
					8	12.971
35	5.380	8.069	10.759	16.139	9	14.592
37½	.375	.082	.750	.125	10	16.213
40	.370	.065	.741	.111		
45	.362	.042	.723	.085	Longitude interval.	Inch.
					' 5	.008
50	5.353	8.029	10.706	16.059	7½	.007
52½	.349	.023	.697	.046	10	.012
55	.344	.016	.689	.033	15	.026
60	.335	.002	.670	.006		
					Latitude interval.	Meridional distance.
49 00	5.335	8.002	10.670	16.005	' 1	1.622
05	.326	7.989	.652	15.978	2	3.243
07½	.322	.982	.643	.965	3	4.865
10	.317	.976	.635	.952	4	6.486
15	.308		.616	.924	5	8.108
					6	9.730
20	5.299	7.948	10.598	15.897	7	11.351
22½	.295	.942	.590	.885	8	12.972
25	.291	.935	.581	.872	9	14.594
30	.282	.922	.563	.845	10	16.216
35	5.272	7.908	10.545	15.817		
37½	.268	.902	.536	.801		
40	.264	.895	.527	.791		
45	.255	.882	.509	.764		
50	5.246	7.868	10.491	15.737		
52½	.241	.862	.482	.723		
55	.237	.855	.473	.710		
60	.227	.841	.455	.682		

TABLE 10.—*Coordinates for the projection of maps (scale 72688).*

(Prepared by S. S. Gannett and George T. Hawkins.)

Latitude of parallel.	Abcissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval					Longitude interval.	Inch.
	1'	2'	3'	4'	5'		
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
25 00	5.520	11.040	16.560	22.080	27.600	1	.000
05	.516	.032	.549	.065	.581	2	.002
07½	.515	.029	.544	.057	.572	3	.003
10	.512	.025	.538	.050	.562	4	.006
15	.509	.018	.528	.035	.544	5	.009
20	5.505	11.010	16.515	22.020	27.525	Latitude interval.	Meridional distance.
22½	.503	.006	.509	.012	.516		
25	.501	.002	.503	.006	.506		
30	.497	10.996	.492	21.990	.487		
35	5.494	10.988	16.480	21.975	27.468		<i>Inches.</i>
37½	.492	.984	.478	.968	.459	1	6.057
40	.490	.980	.470	.960	.449	2	12.114
45	.486	.972	.458	.945	.430	3	18.171
						4	24.228
						5	30.285
50	5.482	10.965	16.448	21.930	27.411	Longitude interval.	Inch.
52½	.480	.961	.441	.921	.401		
55	.478	.957	.435	.915	.392		
60	.475	.950	.424	.900	.373		
26 00	5.475	10.950	16.424	21.900	27.373	1	.000
05	.470	.942	.412	.882	.353	2	.002
07½	.469	.937	.406	.875	.343	3	.003
10	.467	.933	.400	.867	.333	4	.006
15	.463	.925	.389	.852	.314	5	.009
20	5.459	10.918	16.377	21.835	27.294	Latitude interval.	Meridional distance.
22½	.457	.914	.371	.828	.284		
25	.455	.910	.365	.820	.275		
30	.451	.902	.353	.805	.255		
35	5.447	10.904	16.341	21.789	27.235		<i>Inches.</i>
37½	.445	.890	.335	.780	.225	1	6.058
40	.443	.887	.330	.773	.216	2	12.115
45	.439	.878	.318	.758	.196	3	18.173
						4	24.231
						5	30.289
50	5.435	10.870	16.306	21.741	27.176	Longitude interval.	Inch.
52½	.433	.866	.298	.732	.167		
55	.431	.863	.294	.725	.157		
60	.428	.855	.282	.710	.138		
27 00	5.428	10.855	16.283	21.710	27.138	1	.000
05	.422	.848	.270	.695	.118	2	.002
07½	.421	.843	.264	.688	.108	3	.003
10	.420	.839	.258	.678	.097	4	.006
15	.415	.831	.247	.662	.077	5	.010
20	5.410	10.822	16.233	21.645	27.066	Latitude interval.	Meridional distance.
22½	.409	.818	.227	.636	.046		
25	.407	.815	.220	.628	.036		
30	.403	.805	.210	.612	.015		
35	5.399	10.798	16.198	21.605	26.995		<i>Inches.</i>
37½	.397	.794	.191	.588	.984	1	6.058
40	.395	.790	.185	.580	.974	2	12.117
45	.391	.782	.172	.562	.958	3	18.175
						4	24.235
						5	30.292
50	5.387	10.774	16.160	21.548	26.933	Longitude interval.	Inch.
52½	.384	.768	.154	.538	.923		
55	.382	.765	.148	.530	.912		
60	.378	.758	.135	.515	.892		

TABLE 10.—Coordinates for the projection of maps (scale 1:100000)—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
	Inches.	Inches.	Inches.	Inches.	Inches.		
28 00	6.378	10.768	16.135	21.515	26.892	1	.000
05	.374	.749	.122	.498	.871	2	.002
07½	.372	.745	.118	.496	.861	3	.003
10	.370	.740	.110	.490	.850	4	.006
15	.366	.732	.098	.465	.830	5	.010
20	5.362	10.724	16.085	21.448	26.810	Latitude interval.	Meridional distance.
22½	.360	.720	.078	.439	.799		
25	.358	.716	.072	.430	.789		
30	.354	.708	.060	.415	.768		
							Inches.
35	5.349	10.698	16.048	21.398	26.746	1	6.060
37½	.347	.694	.041	.398	.735	2	12.120
40	.345	.690	.035	.390	.725	3	18.178
45	.341	.682	.022	.362	.703	4	24.238
						5	30.296
50	5.336	10.673	16.010	21.348	26.683	Longitude interval.	Inch.
52½	.334	.668	.004	.319	.672		
55	.332	.665	.000	.310	.662		
60	.328	.657	.985	.312	.640		
29 00	6.328	10.657	15.985	21.312	26.640	1	.000
05	.324	.648	.971	.295	.619	2	.002
07½	.322	.643	.965	.287	.608	3	.003
10	.320	.640	.958	.278	.598	4	.006
15	.315	.630	.945	.260	.575	5	.010
20	5.310	10.621	15.932	21.242	26.563	Latitude interval.	Meridional distance.
22½	.308	.617	.925	.234	.542		
25	.306	.613	.920	.225	.532		
30	.302	.605	.907	.209	.511		
							Inches.
35	5.298	10.586	15.894	21.192	26.490	1	6.060
37½	.295	.591	.888	.183	.478	2	12.121
40	.294	.587	.880	.174	.468	3	18.182
45	.289	.578	.867	.156	.445	4	24.242
						5	30.302
50	5.284	10.560	15.868	21.137	26.422	Longitude interval.	Inch.
52½	.282	.555	.847	.130	.412		
55	.280	.550	.841	.121	.401		
60	.275	.539	.828	.104	.380		
30 00	5.275	10.552	15.828	21.101	26.380	1	.000
05	.272	.545	.815	.086	.358	2	.002
07½	.269	.538	.808	.077	.346	3	.003
10	.267	.534	.801	.068	.335	4	.006
15	.262	.525	.787	.050	.312	5	.010
20	5.258	10.516	15.774	21.032	26.290	Latitude interval.	Meridional distance.
22½	.256	.512	.768	.024	.290		
25	.254	.507	.760	.014	.288		
30	.249	.499	.748	.008	.267		
							Inches.
35	5.245	10.480	15.715	20.980	26.215	1	6.061
37½	.243	.485	.725	.97	.213	2	12.122
40	.240	.480	.721	.061	.202	3	18.183
45	.236	.472	.708	.044	.180	4	24.245
						5	30.305
50	5.232	10.463	15.690	20.927	26.179	Longitude interval.	Inch.
52½	.229	.458	.688	.918	.167		
55	.227	.454	.681	.909	.155		
60	.222	.445	.667	.890	.142		

TABLE 10.—Coordinates for the projection of maps (scale  $\frac{1}{111400}$ )—Continued.

Latitude of parallel	Abcissas of developed parallel,					Ordinates of developed parallel,	
	Longitude interval					Longitude interval	Inch.
	1'. <i>Inches.</i>	2'. <i>Inches.</i>	3'. <i>Inches.</i>	4'. <i>Inches.</i>	5'. <i>Inches.</i>		
31	00	5.222	10.445	15.667	20.890	26.112	1 .000
	05	.218	.435	.654	.872	.089	2 .002
	07½	.218	.432	.647	.868	.079	3 .003
	10	.218	.426	.640	.853	.068	4 .006
	15	.209	.417	.626	.834	.043	5 .010
	20	5.204	10.408	15.613	20.817	26.021	Latitude interval.
	22½	.202	.404	.605	.807	.009	Meridi- onal distance.
	25	.200	.400	.600	.798	.008	<i>Inches.</i>
	30	.195	.390	.585	.780	.975	1 6.062
	35	5.190	10.381	15.571	20.762	25.952	2 12.124
	37½	.188	.376	.566	.753	.941	3 18.187
	40	.186	.372	.557	.743	.929	4 24.249
	45	.181	.362	.544	.725	.906	5 30.311
	50	5.177	10.353	15.530	20.706	25.883	Longitude interval.
	52½	.174	.348	.523	.697	.871	Inch.
	55	.172	.344	.516	.688	.860	
	60	.167	.334	.502	.669	.836	
32	00	5.167	10.334	15.502	20.669	25.836	1 .000
	05	.162	.325	.487	.650	.812	2 .002
	07½	.160	.320	.480	.640	.800	3 .003
	10	.158	.315	.473	.630	.788	4 .007
	15	.153	.305	.458	.611	.764	5 .010
	20	5.148	10.296	15.444	20.592	25.740	Latitude interval.
	22½	.146	.291	.437	.582	.728	Meridi- onal distance.
	25	.143	.286	.430	.573	.716	<i>Inches.</i>
	30	.139	.277	.416	.554	.693	1 6.068
	35	5.134	10.268	15.401	20.535	25.669	2 12.127
	37½	.131	.263	.394	.526	.659	3 18.190
	40	.129	.258	.387	.516	.645	4 24.254
	45	.124	.249	.373	.498	.622	5 30.317
	50	5.120	10.239	15.359	20.478	25.598	Longitude interval.
	52½	.117	.234	.352	.469	.586	Inch.
	55	.115	.229	.344	.459	.574	
	60	.110	.220	.330	.440	.550	
33	00	5.110	10.220	15.330	20.440	25.550	1 .000
	05	.105	.210	.316	.421	.526	2 .002
	07½	.103	.206	.308	.411	.514	3 .003
	10	.100	.201	.301	.402	.502	4 .007
	15	.096	.191	.287	.382	.478	5 .010
	20	5.091	10.182	15.272	20.363	25.454	Latitude interval.
	22½	.088	.176	.264	.352	.440	Meridi- onal distance.
	25	.086	.171	.257	.342	.428	<i>Inches.</i>
	30	.081	.162	.242	.323	.404	1 6.065
	35	5.076	10.152	15.228	20.304	25.380	2 12.129
	37½	.074	.147	.220	.294	.368	3 18.193
	40	.071	.143	.213	.285	.358	4 24.258
	45	.066	.132	.199	.266	.331	5 30.322
	50	5.061	10.123	15.184	20.246	25.307	Longitude interval.
	52½	.059	.118	.177	.236	.295	Inch.
	55	.056	.113	.169	.228	.282	
	60	.052	.103	.155	.206	.258	

TABLE 10.—Coordinates for the projection of maps (scale 1:100,000)—Continued.

Latitude of parallel.	Abcissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'	2'	3'	4'	5'		
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
34 00	5.052	10.103	15.155	20.206	25.258	1	.000
05	.047	.098	.140	.186	.233	2	.002
07½	.044	.089	.132	.176	.220	3	.003
10	.042	.083	.125	.166	.208	4	.007
15	.037	.073	.110	.148	.183	5	.010
20	5.032	10.063	15.095	20.126	25.158	Latitude interval.	
22½	.029	.058	.087	.116	.145	Meridional distance.	
25	.027	.053	.080	.108	.133	<i>Inches.</i>	
30	.022	.043	.065	.092	.108	1	
35	5.017	10.033	15.050	20.066	25.083	2	
37½	.014	.028	.042	.056	.070	3	
40	.012	.023	.035	.046	.056	4	
45	.007	.013	.020	.026	.033	5	
50	5.002	10.003	15.005	20.006	25.008	Longitude interval.	Inch.
52½	.999	.998	14.997	19.996	24.995		
55	.997	.993	.990	.986	.983	1	.000
60	.992	.983	.975	.966	.958		
25 00	4.992	9.983	14.975	19.966	24.958	2	.002
05	.987	.973	.960	.947	.933	3	.003
07½	.984	.968	.952	.936	.920	4	.007
10	.982	.963	.945	.928	.908	5	.010
15	.975	.953	.929	.906	.882	Latitude interval.	
20	4.971	9.942	14.913	19.885	24.856	Meridional distance.	
22½	.969	.937	.906	.874	.843	<i>Inches.</i>	
25	.966	.932	.899	.864	.830	1	
30	.961	.922	.883	.844	.805	2	
35	4.956	9.912	14.864	19.824	24.780	3	
37½	.953	.907	.860	.814	.767	4	
40	.951	.902	.853	.805	.754	5	
45	.946	.891	.837	.783	.728	Longitude interval.	
50	4.940	9.881	14.821	19.762	24.702	Inch.	
52½	.938	.876	.814	.752	.690	1	
55	.935	.871	.806	.742	.677	2	
60	.930	.861	.791	.722	.652	3	
36 00	4.930	9.861	14.791	19.722	24.652	4	
05	.925	.850	.776	.701	.626	5	
07½	.923	.843	.768	.690	.613	Latitude interval.	
10	.920	.840	.760	.680	.600	Meridional distance.	
15	.915	.830	.745	.660	.574	<i>Inches.</i>	
20	4.910	9.819	14.719	19.638	24.548	1	
22½	.907	.814	.721	.628	.535	2	
25	.904	.806	.712	.617	.521	3	
30	.899	.798	.697	.596	.495	4	
35	4.894	9.787	14.681	19.574	24.468	5	
37½	.891	.782	.673	.564	.455	Longitude interval.	
40	.886	.777	.665	.554	.442	Inch.	
45	.883	.766	.649	.532	.415	1	
50	4.878	9.756	14.638	19.512	24.389	2	
52½	.875	.750	.626	.501	.376	3	
55	.873	.745	.618	.490	.363	4	
60	.869	.735	.603	.470	.338	5	

TABLE 10.—(Coordinates for the projection of maps (scale 1:100000))—Continued.

Latitude of parallel	Abcissas of developed parallel					Ordinates of devel oped parallel.	
	Longitude interval.					Longi- tude interval.	Inch.
	1'	2'	3'	4'	5'		
37 00	Inches. 4.864	Inches. 9.735	Inches. 14.603	Inches. 19.470	Inches. 24.338	1	.000
05	.862	.724	.586	.448	.310	2	.002
07½	.859	.714	.578	.437	.296	3	.006
10	.856	.713	.569	.426	.282	4	.007
15	.851	.702	.563	.404	.255	5	.010
20	4.846	9.691	14.537	19.382	24.228	Latitude interval.	Meridi- onal distance.
22½	.843	.686	.529	.372	.215		
25	.840	.680	.521	.362	.202		
30	.835	.670	.505	.340	.175		
35	4.830	9.659	14.489	19.318	24.148		
37½	.827	.654	.481	.308	.185	1	Inches. 6.068
40	.824	.649	.473	.298	.122	2	12.136
45	.819	.638	.457	.276	.095	3	18.205
						4	24.273
						5	30.341
50	4.814	9.627	14.441	19.254	24.068	Longi- tude interval.	Inch.
52½	.811	.622	.432	.243	.054		
55	.806	.616	.424	.232	.040		
60	.802	.605	.407	.209	.012		
38 00	4.802	9.605	14.407	19.209	24.012		
05	.797	.594	.391	.188	.23.985	1	.000
07½	.794	.589	.383	.178	.972	2	.002
10	.792	.584	.375	.167	.959	3	.006
15	.786	.573	.359	.146	.932	4	.007
						5	.010
20	4.781	9.562	14.313	19.124	23.906	Latitude interval.	Meridi- onal dis- tance.
22½	.778	.556	.385	.113	.891		
25	.776	.551	.326	.102	.878		
30	.770	.540	.310	.080	.850		
35	4.764	9.529	14.293	19.008	23.822		
37½	.762	.524	.285	.047	.809	1	Inches. 6.069
40	.759	.518	.277	.036	.795	2	12.138
45	.754	.507	.261	.015	.768	3	18.207
						4	24.277
						5	30.345
50	4.743	9.496	14.214	18.193	23.740	Longi- tude interval.	Inch.
52½	.745	.490	.235	.981	.726		
55	.742	.485	.227	.970	.712		
60	.737	.474	.211	.946	.685		
39 00	4.737	9.474	14.211	18.949	23.685		
05	.731	.463	.194	.926	.657	1	.000
07½	.728	.457	.185	.914	.642	2	.002
10	.726	.451	.177	.902	.628	3	.006
15	.720	.440	.160	.880	.600	4	.007
						5	.010
20	4.714	9.429	14.143	18.838	23.572	Latitude interval.	Meridi- onal distance.
22½	.712	.423	.135	.846	.558		
25	.709	.417	.126	.835	.544		
30	.703	.407	.119	.813	.516		
35	4.698	9.395	14.093	18.790	23.488		
37½	.695	.389	.084	.779	.474	1	Inches. 6.070
40	.692	.384	.076	.768	.460	2	12.140
45	.686	.373	.069	.746	.432	3	18.210
						4	24.281
						5	30.351
50	4.681	9.362	14.042	18.723	23.404	Longi- tude interval.	Inch.
52½	.678	.356	.034	.712	.390		
55	.675	.350	.025	.700	.375		
60	.669	.339	.008	.678	.347		

TABLE 10.—Coordinates for the projection of maps (scale 1:111,111)—Continued.

Latitude of parallel.	Abscissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
40 00	<i>Inches.</i> 4.669	<i>Inches.</i> 9.339	<i>Inches.</i> 14.008	<i>Inches.</i> 18.678	<i>Inches.</i> 23.347	1	—
05	.664	.828	13.991	.655	.319	2	.002
07½	.661	.822	.983	.644	.305	3	.005
10	.658	.816	.975	.632	.291	4	.007
15	.652	.805	.957	.610	.262	5	.010
20	4.647	9.293	13.940	18.586	23.233	Latitude interval.	Meridional distance.
22½	.644	.808	.931	.575	.219		
25	.641	.802	.923	.564	.205		
30	.635	.771	.905	.542	.177		
35	4.630	9.259	13.899	18.518	23.148	1	<i>Inches.</i> —
37½	.627	.753	.880	.507	.134	2	12.143
40	.624	.748	.871	.495	.119	3	18.215
45	.618	.726	.854	.472	.090	4	24.286
						5	30.358
50	4.612	9.224	13.837	—	23.061	Longitude interval.	Inch.
52½	.609	.719	.828	.439	.047		
55	.605	.713	.819	.426	.032		
60	.600	.701	.801	.402	.002		
41 00	4.600	9.201	13.801	—	23.002	1	—
05	.595	.700	.794	.378	.22.978	2	—
07½	.592	.693	.775	.366	.968	3	.005
10	.589	.678	.766	.355	.944	4	.007
15	.583	.666	.749	.332	.915	5	.010
20	4.577	9.154	13.732	18.309	22.860	Latitude interval.	Meridional distance.
22½	.574	.649	.723	.298	.972		
25	.571	.643	.714	.286	.957		
30	.565	.631	.697	.262	.928		
35	4.560	9.119	13.679	18.239	22.798	1	<i>Inches.</i> 6.072
37½	.557	.614	.670	.227	.784	2	12.145
40	.554	.608	.661	.215	.769	3	18.218
45	.548	.596	.644	.192	.740	4	24.290
						5	30.362
50	4.542	9.084	13.626	18.168	22.710	Longitude interval.	Inch.
52½	.539	.578	.617	.156	.695		
55	.536	.572	.608	.145	.681		
42 00	4.530	9.060	13.591	18.122	22.652	1	.000
05	.524	.549	.572	.098	.622	2	.002
07½	.521	.543	.564	.086	.607	3	.005
10	.518	.537	.555	.073	.592	4	.007
15	.513	.525	.537	.050	.563	5	.010
20	4.507	9.013	13.520	18.027	22.583	Latitude interval.	Meridional distance.
22½	.504	.507	.511	.014	.518		
25	.501	.502	.502	.003	.504		
30	.495	.490	.484	17.979	.474		
35	4.489	8.978	13.467	17.956	22.445	1	<i>Inches.</i> 6.073
37½	.486	.972	.456	.944	.430	2	12.148
40	.483	.966	.449	.932	.415	3	18.220
45	.477	.954	.431	.908	.385	4	24.294
						5	30.367
50	4.471	8.942	13.413	17.844	22.355	Longitude interval.	Inch.
52½	.468	.936	.404	.872	.340		
55	.465	.930	.395	.840	.325		
60	.459	.918	.377	.836	.295		

TABLE 10.—*Coordinates for the projection of maps (scale 1:500,000)*—Continued.

Latitude of parallel.	Abcissas of developed parallel					Ordinates of devel- oped parallel.	
	Longitude interval.					Longi- tude interval	Inch.
	1'. <i>Inches.</i>	2'. <i>Inches.</i>	3'. <i>Inches.</i>	4'. <i>Inches.</i>	5'. <i>Inches.</i>		
43 00	4.459	8.918	13.377	17.836	22.295	1	.000
05	.453	.906	.359	.812	.265	2	.002
07½	.450	.899	.349	.799	.249	3	.006
10	.447	.894	.340	.787	.234	4	.007
15	.441	.882	.322	.763	.203	5	.010
20	4.434	8.869	13.303	17.738	22.172	Latitude interval.	
22½	.431	.863	.294	.726	.157	Meridi- onal distance.	
25	.428	.856	.285	.713	.141	<i>Inches.</i>	
30	.422	.844	.266	.688	.110	1	6.075
35	4.416	8.832	13.248	17.664	22.080	2	12.149
37½	.413	.826	.239	.652	.065	3	18.223
40	.410	.820	.230	.640	.050	4	24.298
45	.404	.808	.212	.616	.020	5	30.372
50	4.398	8.796	13.194	17.582	21.990	Longi- tude interval.	
52½	.395	.789	.184	.579	.974	Inch.	
55	.392	.784	.175	.567	.959		
60	.386	.772	.157	.543	.929		
44 00	4.386	8.772	13.157	17.543	21.929	1	.000
05	.380	.759	.139	.518	.898	2	.002
07½	.376	.753	.129	.506	.882	3	.006
10	.373	.747	.120	.494	.867	4	.007
15	.367	.734	.102	.469	.836	5	.010
20	4.361	8.722	13.083	17.444	21.806	Latitude interval.	
22½	.358	.716	.074	.431	.789	Meridi- onal distance.	
25	.355	.709	.064	.419	.774	<i>Inches.</i>	
30	.349	.697	.046	.394	.743	1	6.076
35	4.342	8.685	13.027	17.370	21.712	2	12.152
37½	.339	.678	.018	.357	.696	3	18.228
40	.336	.672	.009	.345	.681	4	24.304
45	.330	.660	.000	.320	.650	5	30.380
50	4.324	8.648	12.971	17.295	21.619	Longi- tude interval.	
52½	.321	.642	.963	.283	.604	Inch.	
55	.318	.635	.953	.270	.588		
60	.312	.623	.935	.246	.558		
45 00	4.312	8.623	12.935	17.246	21.558	1	.000
05	.305	.610	.916	.221	.527	2	.002
07½	.302	.604	.906	.208	.511	3	.006
10	.299	.598	.897	.196	.495	4	.007
15	.293	.586	.878	.171	.464	5	.010
20	4.287	8.573	12.860	17.146	21.433	Latitude interval.	
22½	.283	.567	.849	.134	.417	Meridi- onal distance.	
25	.280	.560	.841	.121	.401	<i>Inches.</i>	
30	.274	.548	.822	.096	.370	1	6.077
35	4.268	8.535	12.803	17.070	21.338	2	12.154
37½	.264	.529	.793	.058	.322	3	18.231
40	.261	.522	.784	.045	.306	4	24.308
45	.255	.510	.765	.020	.275	5	30.385
50	4.249	8.497	12.746	16.995	21.243	Longi- tude interval.	
52½	.246	.491	.737	.982	.228	Inch.	
55	.242	.485	.727	.970	.212		
60	.236	.472	.707	.944	.180		



TABLE 10.—Coordinates for the projection of maps (scale 1:100,000)—Continued.

Latitude of parallel.	Abacuses of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>		
46 00	4.236	8.472	12.707	16.944	21.179	1	.000
05	.229	.459	.688	.918	.147	2	.003
07½	.226	.452	.679	.905	.131	3	.005
10	.223	.446	.669	.892	.115	4	.007
15	.216		.649	.867	.092	5	.010
20	4.216	8.420	12.630	16.840	21.051	Latitude interval.	Meridional distance.
22½	.207	.414	.621	.828	.086		
25	.204	.408	.611	.815	.079		
30	.196	.395	.598	.790	20.968		
35	4.191	8.382	12.573	16.764	20.955		<i>Inches.</i>
37½	.188	.376	.564	.752	.989	1	6.078
40	.184	.369	.558	.728	.922	2	12.157
45	.178	.360	.554	.712	.890	3	18.235
						4	24.313
						5	30.391
50	4.172	8.343	12.515	16.687	20.958	Longitude interval.	Inch.
52½	.169		.505	.674	.842		
55	.165	.330	.495	.661	.826		
60	.159	.313	.476	.635	.794		
47 00	4.159	8.318	12.476	16.635	20.794		
05	.152	.305	.457	.610	.762	1	.000
07½	.149	.299	.448	.597	.746	2	.002
10	.146	.292	.438	.584	.730	3	.005
15	.139	.279	.414	.564	.697	4	.007
						5	.010
20	4.133	8.266	12.398	16.581	20.664	Latitude interval.	Meridional distance.
22½	.130	.259	.389	.518	.648		
25	.126	.252	.378	.505	.631		
30	.120	.239	.350	.476	.598		
35	4.113	8.226	12.339	16.452	20.565		<i>Inches.</i>
37½	.110	.220	.329	.439	.549	1	6.078
40	.106	.213	.319	.425	.532	2	12.157
45	.100	.200	.300	.400	.500	3	18.235
						4	24.313
						5	30.392
50	4.094	8.187	12.281	16.375	20.468	Longitude interval.	Inch.
52½	.090	.180	.271	.361	.451		
55	.089	.174	.261	.348	.435		
60	.080	.161	.241	.322	.402		
48 00	4.080	8.160	12.241	16.321	20.401		
05	.074	.148	.222	.296	.370	1	.000
07½	.071	.142	.212	.284	.354	2	.002
10	.067	.135	.202	.270	.337	3	.005
15	.061	.122	.182	.244	.304	4	.007
						5	.010
20	4.054	8.108	12.162	16.217	20.271	Latitude interval.	Meridional distance.
22½	.051	.102	.153	.204	.255		
25	.048	.095	.143	.190	.238		
30	.041	.082	.123	.164	.205		
35	4.034	8.069	12.108	16.138	20.172		<i>Inches.</i>
37½	.031	.062	.093	.124	.155	1	6.080
40	.028	.056	.083	.110	.138	2	12.160
45	.021	.042	.063	.084	.105	3	18.240
						4	24.320
						5	30.400
50	4.014	8.029	12.043	16.058	20.072	Longitude interval.	Inch.
52½	.011	.022	.034	.045	.056		
55	.008	.016	.024	.031	.039		
60	.001	.002	.003	.004	.006		

TABLE 10.—Coordinates for the projection of maps (scale 1:750,000)—Continued.

Latitude of parallel.	Abcissas of developed parallel.					Ordinates of developed parallel.	
	Longitude interval.					Longitude interval.	Inch.
	1'.	2'.	3'.	4'.	5'.		
° ' 49 00	<i>Inches.</i> 4.001	<i>Inches.</i> 8.002	<i>Inches.</i> 12.003	<i>Inches.</i> 16.004	<i>Inches.</i> 20.006	' 1	 .000
05	3.995	7.989	11.984	15.978	19.973	2	.002
07½	.991	.982	.974	.965	.956	3	.005
10	.988	.976	.964	.952	.939	4	.007
15	.981	.962	.943	.924	.905	5	.010
20	3.974	7.949	11.923	15.898	19.872	<i>Latitude interval.</i>	<i>Meridional distance.</i>
22½	.971	.942	.914	.885	.856		
25	.968	.936	.904	.872	.840		
30	.961	.922	.883	.844	.805		
35	3.954	7.908	11.863	15.817	19.771	' 1	<i>Inches.</i> 6.081
37½	.951	.902	.853	.804	.755	2	12.162
40	.948	.895	.843	.790	.738	3	18.243
45	.941	.882	.823	.764	.705	4	24.324
						5	30.405
50	3.934	7.869	11.803	15.738	19.672		
52½	.931	.862	.793	.724	.655		
55	.928	.855	.783	.710	.638		
60	.921	.842	.762	.683	.604		

TABLE 11.—*Areas of quadrilaterals of earth's surface of 30' extent in latitude and longitude.*

[From Smithsonian Geographical Tables.]

Middle lati- tude of quadrilateral.	Area in square miles.	Middle lati- tude of quadrilateral.	Area in square miles.	Middle lati- tude of quadrilateral.	Area in square miles.
° /		° /		° /	
0 00	1,188.10	11 00	1,166.84	22 00	1,103.68
0 15	1,188.08	11 15	1,165.86	22 15	1,101.77
0 30	1,188.05	11 30	1,164.86	22 30	1,099.84
0 45	1,188.00	11 45	1,163.85	22 45	1,097.88
1 00	1,187.92	12 00	1,162.81	23 00	1,095.91
1 15	1,187.82	12 15	1,161.75	23 15	1,093.92
1 30	1,187.70	12 30	1,160.67	23 30	1,091.90
1 45	1,187.56	12 45	1,159.56	23 45	1,089.87
2 00	1,187.39	13 00	1,158.44	24 00	1,087.81
2 15	1,187.20	13 15	1,157.29	24 15	1,085.74
2 30	1,186.99	13 30	1,156.12	24 30	1,083.64
2 45	1,186.76	13 45	1,154.93	24 45	1,081.52
3 00	1,186.51	14 00	1,153.72	25 00	1,079.39
3 15	1,186.24	14 15	1,152.48	25 15	1,077.23
3 30	1,185.95	14 30	1,151.23	25 30	1,075.05
3 45	1,185.62	14 45	1,149.95	25 45	1,072.85
4 00	1,185.28	15 00	1,148.65	26 00	1,070.64
4 15	1,184.92	15 15	1,147.33	26 15	1,068.40
4 30	1,184.53	15 30	1,145.99	26 30	1,066.14
4 45	1,184.13	15 45	1,144.63	26 45	1,063.86
5 00	1,183.70	16 00	1,143.25	27 00	1,061.56
5 15	1,183.24	16 15	1,141.84	27 15	1,059.24
5 30	1,182.77	16 30	1,140.41	27 30	1,056.90
5 45	1,182.28	16 45	1,138.96	27 45	1,054.54
6 00	1,181.76	17 00	1,137.50	28 00	1,052.16
6 15	1,181.22	17 15	1,136.00	28 15	1,049.76
6 30	1,180.66	17 30	1,134.49	28 30	1,047.34
6 45	1,180.08	17 45	1,132.96	28 45	1,044.90
7 00	1,179.48	18 00	1,131.41	29 00	1,042.44
7 15	1,178.85	18 15	1,129.83	29 15	1,039.97
7 30	1,178.20	18 30	1,128.24	29 30	1,037.47
7 45	1,177.53	18 45	1,126.62	29 45	1,034.95
8 00	1,176.84	19 00	1,124.98	30 00	1,032.41
8 15	1,176.13	19 15	1,123.32	30 15	1,029.85
8 30	1,175.39	19 30	1,121.64	30 30	1,027.27
8 45	1,174.63	19 45	1,119.93	30 45	1,024.68
9 00	1,173.86	20 00	1,118.21	31 00	1,022.06
9 15	1,173.06	20 15	1,116.47	31 15	1,019.43
9 30	1,172.23	20 30	1,114.71	31 30	1,016.77
9 45	1,171.39	20 45	1,112.92	31 45	1,014.10
10 00	1,170.52	21 00	1,111.11	32 00	1,011.40
10 15	1,169.63	21 15	1,109.28	32 15	1,008.69
10 30	1,168.73	21 30	1,107.44	32 30	1,005.96
10 45	1,167.80	21 45	1,105.57	32 45	1,003.20

TABLE 11.—Areas of quadrilaterals of earth's surface of 30' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.		Area in square miles.	Middle latitude of quadrilateral.		Area in square miles.	Middle latitude of quadrilateral.		Area in square miles.
°	'		°	'		°	'	
33	00	1,000.43	44	00	860.25	55	00	687.70
33	15	997.64	44	15	856.67	55	15	683.44
33	30	994.83	44	30	853.07	55	30	679.17
33	45	992.00	44	45	849.46	55	45	674.89
34	00	989.16	45	00	845.82	56	00	670.60
34	15	986.29	45	15	842.18	56	15	666.29
34	30	983.41	45	30	838.51	56	30	661.97
34	45	980.50	45	45	834.83	56	45	657.64
35	00	977.58	46	00	831.13	57	00	653.29
35	15	974.64	46	15	827.42	57	15	648.93
35	30	971.68	46	30	823.68	57	30	644.55
35	45	968.70	46	45	819.94	57	45	640.17
36	00	965.70	47	00	816.18	58	00	635.77
36	15	962.68	47	15	812.40	58	15	631.36
36	30	959.65	47	30	808.60	58	30	626.93
36	45	956.60	47	45	804.79	58	45	622.49
37	00	953.52	48	00	800.97	59	00	618.05
37	15	950.43	48	15	797.13	59	15	613.59
37	30	947.32	48	30	793.27	59	30	609.11
37	45	944.21	48	45	789.39	59	45	604.62
38	00	941.05	49	00	785.50	60	00	600.13
38	15	937.88	49	15	781.60	60	15	595.62
38	30	934.71	49	30	777.68	60	30	591.09
38	45	931.51	49	45	773.74	60	45	586.56
39	00	928.29	50	00	769.79	61	00	582.01
39	15	925.06	50	15	765.83	61	15	577.45
39	30	921.80	50	30	761.85	61	30	572.88
39	45	918.53	50	45	757.85	61	45	568.30
40	00	915.25	51	00	753.84	62	00	563.71
40	15	911.94	51	15	749.82	62	15	559.11
40	30	908.61	51	30	745.78	62	30	554.49
40	45	905.27	51	45	741.72	62	45	549.86
41	00	901.91	52	00	737.65	63	00	545.23
41	15	898.54	52	15	733.57	63	15	540.58
41	30	895.14	52	30	729.47	63	30	535.92
41	45	891.73	52	45	725.36	63	45	531.25
42	00	888.30	53	00	721.23	64	00	526.57
42	15	884.85	53	15	717.08	64	15	521.88
42	30	881.39	53	30	712.93	64	30	517.17
42	45	877.91	53	45	708.76	64	45	512.46
43	00	874.41	54	00	704.57	65	00	507.74
43	15	870.90	54	15	700.38	65	15	503.01
43	30	867.37	54	30	696.16	65	30	498.26
43	45	863.82	54	45	691.94	65	45	493.51

TABLE 11.—*Areas of quadrilaterals of earth's surface of 30' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilat- eral.	Area in square miles.	Middle latitude of quadrilat- eral.	Area in square miles.	Middle latitude of quadrilat- eral.	Area in square miles.
° /		° /		° /	
66 00	488.75	74 00	331.62	82 00	167.57
66 15	483.97	74 15	326.58	82 15	162.37
66 30	479.19	74 30	321.53	82 30	157.16
66 45	474.40	74 45	316.48	82 45	151.95
67 00	469.60	75 00	311.42	83 00	146.74
67 15	464.78	75 15	306.36	83 15	141.53
67 30	459.96	75 30	301.28	83 30	136.31
67 45	455.13	75 45	296.21	83 45	131.09
68 00	450.29	76 00	291.12	84 00	125.87
68 15	445.45	76 15	286.04	84 15	120.64
68 30	440.59	76 30	280.94	84 30	115.42
68 45	435.72	76 45	275.84	84 45	110.18
69 00	430.84	77 00	270.73	85 00	104.95
69 15	425.96	77 15	265.62	85 15	99.72
69 30	421.06	77 30	260.50	85 30	94.48
69 45	416.16	77 45	255.38	85 45	89.25
70 00	411.25	78 00	250.25	86 00	84.01
70 15	406.34	78 15	245.12	86 15	78.76
70 30	401.41	78 30	239.98	86 30	73.52
70 45	396.47	78 45	234.83	86 45	68.27
71 00	391.53	79 00	229.68	87 00	63.03
71 15	386.58	79 15	224.53	87 15	57.78
71 30	381.62	79 30	219.37	87 30	52.53
71 45	376.65	79 45	214.21	87 45	47.28
72 00	371.68	80 00	209.05	88 00	42.03
72 15	366.70	80 15	203.88	88 15	36.78
72 30	361.71	80 30	198.70	88 30	31.53
72 45	356.71	80 45	193.52	88 45	26.27
73 00	351.71	81 00	188.34	89 00	21.02
73 15	346.69	81 15	183.15	89 15	15.76
73 30	341.68	81 30	177.96	89 30	10.51
73 45	336.65	81 45	172.77	89 45	5.26

TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
0	07	30	297.02	5	37	30	295.63	11	07	30	291.59
0	15	00	297.02	5	45	00	295.57	11	15	00	291.47
0	22	30	297.02	5	52	30	295.51	11	22	30	291.34
0	30	00	297.01	6	00	00	295.44	11	30	00	291.22
0	37	30	297.01	6	07	30	295.37	11	37	30	291.09
0	45	00	297.00	6	15	00	295.31	11	45	00	290.96
0	52	30	296.99	6	22	30	295.24	11	52	30	290.83
1	00	00	296.98	6	30	00	295.17	12	00	00	290.70
1	07	30	296.97	6	37	30	295.09	12	07	30	290.57
1	15	00	296.96	6	45	00	295.02	12	15	00	290.44
1	22	30	296.94	6	52	30	294.95	12	22	30	290.30
1	30	00	296.93	7	00	00	294.87	12	30	00	290.17
1	37	30	296.91	7	07	30	294.79	12	37	30	290.03
1	45	00	296.89	7	15	00	294.71	12	45	00	289.89
1	52	30	296.87	7	22	30	294.63	12	52	30	289.75
2	00	00	296.85	7	30	00	294.55	13	00	00	289.61
2	07	30	296.82	7	37	30	294.47	13	07	30	289.47
2	15	00	296.80	7	45	00	294.39	13	15	00	289.33
2	22	30	296.77	7	52	30	294.30	13	22	30	289.18
2	30	00	296.75	8	00	00	294.21	13	30	00	289.03
2	37	30	296.72	8	07	30	294.12	13	37	30	288.88
2	45	00	296.69	8	15	00	294.03	13	45	00	288.73
2	52	30	296.66	8	22	30	293.94	13	52	30	288.58
3	00	00	296.63	8	30	00	293.85	14	00	00	288.43
3	07	30	296.60	8	37	30	293.75	14	07	30	288.28
3	15	00	296.56	8	45	00	293.66	14	15	00	288.12
3	22	30	296.53	8	52	30	293.56	14	22	30	287.96
3	30	00	296.49	9	00	00	293.47	14	30	00	287.81
3	37	30	296.45	9	07	30	293.37	14	37	30	287.65
3	45	00	296.41	9	15	00	293.27	14	45	00	287.49
3	52	30	296.36	9	22	30	293.16	14	52	30	287.33
4	00	00	296.32	9	30	00	293.06	15	00	00	287.17
4	07	30	296.28	9	37	30	292.95	15	07	30	287.00
4	15	00	296.23	9	45	00	292.85	15	15	00	286.83
4	22	30	296.18	9	52	30	292.74	15	22	30	286.67
4	30	00	296.13	10	00	00	292.63	15	30	00	286.50
4	37	30	296.08	10	07	30	292.52	15	37	30	286.33
4	45	00	296.03	10	15	00	292.41	15	45	00	286.16
4	52	30	295.98	10	22	30	292.30	15	52	30	285.99
5	00	00	295.93	10	30	00	292.19	16	00	00	285.82
5	07	30	295.87	10	37	30	292.07	16	07	30	285.64
5	15	00	295.81	10	45	00	291.95	16	15	00	285.46
5	22	30	295.75	10	52	30	291.83	16	22	30	285.28
5	30	00	295.69	11	00	00	291.71	16	30	00	285.10

TABLE 12.—Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.				Area in square miles.		Middle latitude of quadrilateral.				Area in square miles.		Middle latitude of quadrilateral.				Area in square miles.	
°	'	"				°	'	"				°	'	"			
16	37	00		284.92		22	07	00		274.96		27	37	30		263.93	
16	45	00		284.74		22	15	00		275.44		27	45	00		263.64	
16	52	30		284.56		22	22	30		275.20		27	52	30		263.34	
17	00	00		284.37		22	30	00		274.96		28	00	00		263.04	
17	07	30		284.18		22	37	30		274.72		28	07	30		262.74	
17	15	00		283.99		22	45	00		274.47		28	15	00		262.44	
17	22	30		283.81		22	52	30		274.22		28	22	30		262.14	
17	30	00		283.62		23	00	00		273.96		28	30	00		261.84	
17	37	30		283.43		23	07	30		273.73		28	37	30		261.54	
17	45	00		283.24		23	15	00		273.48		28	45	00		261.23	
17	52	30		283.05		23	22	30		273.23		28	52	30		260.93	
18	00	00		282.86		23	30	00		272.98		29	00	00		260.61	
18	07	30		282.66		23	37	30		272.72		29	07	30		260.30	
18	15	00		282.47		23	45	00		272.47		29	15	00		259.99	
18	22	30		282.28		23	52	30		272.21		29	22	30		259.68	
18	30	00		282.08		24	00	00		271.95		29	30	00		259.37	
18	37	30		281.88		24	07	30		271.69		29	37	30		259.05	
18	45	00		281.68		24	15	00		271.44		29	45	00		258.74	
18	52	30		281.48		24	22	30		271.17		29	52	30		258.42	
19	00	00		281.28		24	30	00		270.91		30	00	00		258.10	
19	07	30		281.04		24	37	30		270.65		30	07	30		257.78	
19	15	00		280.83		24	45	00		270.38		30	15	00		257.46	
19	22	30		280.62		24	52	30		270.11		30	22	30		257.14	
19	30	00		280.41		25	00	00		269.85		30	30	00		256.82	
19	37	30		280.20		25	07	30		269.58		30	37	30		256.49	
19	45	00		279.99		25	15	00		269.31		30	45	00		256.17	
19	52	30		279.77		25	22	30		269.04		30	52	30		255.84	
20	00	00		279.55		25	30	00		268.76		31	00	00		255.52	
20	07	30		279.34		25	37	30		268.49		31	07	30		255.19	
20	15	00		279.12		25	45	00		268.21		31	15	00		254.86	
20	22	30		278.90		25	52	30		267.94		31	22	30		254.53	
20	30	00		278.68		26	00	00		267.66		31	30	00		254.19	
20	37	30		278.46		26	07	30		267.38		31	37	30		253.86	
20	45	00		278.23		26	15	00		267.10		31	45	00		253.53	
20	52	30		278.00		26	22	30		266.82		31	52	30		253.19	
21	00	00		277.78		26	30	00		266.54		32	00	00		252.85	
21	07	30		277.55		26	37	30		266.25		32	07	30		252.51	
21	15	00		277.32		26	45	00		265.97		32	15	00		252.17	
21	22	30		277.09		26	52	30		265.68		32	22	30		251.83	
21	30	00		276.86		27	00	00		265.39		32	30	00		251.49	
21	37	30		276.63		27	07	30		265.10		32	37	30		251.15	
21	45	00		276.39		27	15	00		264.81		32	45	00		250.80	
21	52	30		276.16		27	22	30		264.52		32	52	30		250.45	
22	00	00		275.92		27	30	00		264.23		33	00	00		250.11	

TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
33	07	30	249.76	38	37	30	233.28	44	07	30	214.61
33	15	00	249.41	38	45	00	232.88	44	15	00	214.17
33	22	30	249.06	38	52	30	232.48	44	22	30	213.72
33	30	00	248.71	39	00	00	232.07	44	30	00	213.27
33	37	30	248.36	39	07	30	231.67	44	37	30	212.82
33	45	00	248.00	39	15	00	231.27	44	45	00	212.37
33	52	30	247.65	39	22	30	230.86	44	52	30	211.91
34	00	00	247.29	■	30	00	230.45	45	00	00	211.46
34	07	30	246.93	39	37	30	230.04	45	07	30	211.00
34	15	00	246.57	39	45	00	229.63	45	15	00	210.55
34	22	30	246.21	39	52	30	229.22	45	22	30	210.09
34	30	00	245.85	40	00	00	228.81	45	30	00	209.63
34	37	30	245.49	40	07	30	228.40	45	37	00	209.17
34	45	00	245.13	40	15	00	227.99	45	45	00	208.71
34	52	30	244.76	40	22	30	227.57	45	52	30	208.25
35	00	00	244.40	40	30	00	227.15	46	00	00	207.78
■	07	30	244.03	40	37	30	226.73	46	07	30	207.32
35	15	00	243.66	40	45	00	226.32	46	15	00	206.86
35	22	30	243.29	40	52	30	225.90	46	22	30	206.39
35	30	00	242.92	41	00	00	225.48	46	30	00	205.92
35	37	30	242.55	41	07	30	225.06	46	37	30	205.45
35	45	00	242.18	41	15	00	224.64	46	45	00	204.99
35	52	30	241.80	41	22	30	224.21	46	52	30	204.52
36	00	00	241.43	41	30	00	223.79	47	00	00	204.05
36	07	30	241.05	41	37	30	223.36	47	07	30	203.57
36	15	00	240.67	41	45	00	222.93	47	15	00	203.10
36	22	30	240.29	41	52	30	222.50	47	22	30	202.63
36	30	00	239.91	42	00	00	222.08	47	30	00	202.15
36	37	30	239.53	42	07	30	221.65	47	37	30	201.67
36	45	00	239.15	42	15	00	221.21	47	45	00	201.20
36	52	30	238.77	42	22	30	220.78	47	52	30	200.72
37	00	00	238.38	42	■	00	220.35	48	00	00	200.24
37	07	30	237.99	42	37	30	219.91	48	07	30	199.76
37	15	00	237.61	42	45	00	219.48	48	15	00	199.28
37	22	30	237.22	42	52	30	219.04	48	22	30	198.80
37	30	00	236.83	43	00	00	218.60	48	30	00	198.32
37	37	00	236.44	43	07	00	218.16	48	37	30	197.83
37	45	00	236.05	43	15	00	217.73	48	45	00	197.35
37	52	30	235.66	43	22	30	217.28	48	52	30	196.86
38	00	00	235.26	43	30	00	216.84	49	00	00	196.38
38	07	00	234.87	43	37	30	216.40	49	07	30	195.89
38	15	00	234.47	43	45	00	215.96	■	15	00	195.40
38	■	00	234.07	43	52	30	215.51	■	22	00	194.91
38	30	00	■	44	00	00	215.06	49	00	00	194.42



TABLE 12.—*Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.*

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
49	37	30	193.93	55	07	30	171.39	60	37	30	147.21
49	■	00	193.44	55	15	00	170.86	60	45	00	146.64
49	52	30	192.94	55	22	30	170.33	60	52	30	146.07
50	00	00	192.45	55	30	00	169.79	61	00	00	145.50
50	07	30	191.95	55	37	30	169.26	61	07	30	144.93
50	■	00	191.46	■	■	00	168.72	61	15	00	144.36
50	22	30	190.96	55	52	30	168.19	61	22	30	143.79
50	30	00	190.46	56	00	00	167.65	61	30	00	143.22
50	37	30	■	56	07	30	167.11	61	■	30	142.65
50	45	00	189.46	56	15	00	166.57	61	■	00	142.08
50	52	30	188.96	56	22	■	166.03	61	52	30	141.50
51	00	■	188.46	56	30	00	165.49	62	00	00	140.93
51	07	30	187.96	56	37	30	164.95	62	07	30	140.35
51	15	00	187.46	56	45	■	164.41	62	15	00	139.78
51	22	30	186.95	56	52	30	163.87	62	22	■	139.20
51	30	00	186.45	57	■	00	163.32	62	30	00	138.62
51	37	30	185.94	57	07	30	162.78	62	37	30	138.04
51	45	00	185.43	57	15	00	162.23	62	45	00	137.47
51	52	30	184.92	57	22	30	161.68	62	52	30	136.89
52	00	00	184.41	57	30	00	161.14	63	00	00	136.31
52	07	30	183.90	57	37	30	160.59	63	07	30	135.73
52	15	00	183.39	57	45	00	160.04	63	15	00	135.15
52	22	30	182.88	57	52	30	159.49	63	22	30	134.56
52	30	00	182.37	58	00	00	158.94	63	30	00	133.98
52	37	30	181.85	58	07	30	158.39	63	37	30	133.40
52	45	00	181.34	58	15	00	157.84	63	45	00	132.81
52	52	30	180.82	58	22	30	157.29	63	52	30	132.23
53	00	00	180.31	58	30	00	156.73	64	00	00	131.64
53	07	30	179.79	58	37	30	156.18	64	07	30	131.06
53	15	00	179.27	58	45	00	155.62	64	15	00	130.47
53	22	30	178.75	58	52	30	155.07	64	22	30	129.88
53	30	00	178.23	59	00	00	154.51	64	30	00	129.29
53	37	30	177.71	59	07	30	153.96	64	37	30	128.70
53	45	00	177.19	59	15	00	153.40	64	45	00	128.12
53	52	30	176.67	59	22	30	152.84	64	52	30	127.53
54	00	00	176.14	59	30	00	152.28	65	00	00	126.94
54	07	30	175.62	59	37	30	151.72	65	07	30	126.34
54	15	00	175.10	59	45	00	151.16	65	15	00	125.75
54	22	30	174.57	59	52	30	150.60	65	22	30	125.16
54	30	00	174.04	60	00	00	150.03	65	30	00	124.57
54	37	30	173.51	60	07	30	149.47	65	37	30	123.97
54	45	00	172.99	60	15	00	148.91	65	45	00	123.38
54	52	30	172.46	60	22	30	148.34	65	52	30	122.78
55	00	00	171.93	60	30	00	147.77	66	00	00	122.19

TABLE 12.—Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
66	07	30	121.59	71	37	30	94.78	77	07	30	67.04
66	15	00	120.99	71	45	00	94.16	77	15	00	66.41
66	22	30	120.40	71	52	30	93.54	77	22	30	65.77
66	30	00	119.80	72	00	00	92.92	77	30	00	65.13
66	37	30	119.20	72	07	30	92.30	77	37	30	64.49
66	45	00	118.60	72	15	00	91.68	77	45	00	63.85
66	52	30	118.00	72	22	30	91.06	77	52	30	63.20
67	00	00	117.40	72	30	00	90.43	78	00	00	62.56
67	07	30	116.80	72	37	30	89.80	78	07	30	61.92
67	15	00	116.20	72	45	00	89.18	78	15	00	61.28
67	22	30	115.59	72	52	30	88.55	78	22	30	60.64
67	30	00	114.99	73	00	00	87.93	78	30	00	60.00
67	37	30	114.39	73	07	30	87.30	78	37	30	59.35
67	45	00	113.78	73	15	00	86.67	78	45	00	58.71
67	52	30	113.18	73	22	30	86.05	78	52	30	58.06
68	00	00	112.57	73	30	00	85.42	79	00	00	57.42
68	07	30	111.97	73	37	30	84.79	79	07	30	56.78
68	15	00	111.36	73	45	00	84.16	79	15	00	56.13
68	22	30	110.76	73	52	30	83.53	79	22	30	55.49
68	30	00	110.15	74	00	00	82.91	79	30	00	54.84
68	37	30	109.54	74	07	30	82.28	79	37	30	54.20
68	45	00	108.93	74	15	00	81.65	79	45	00	53.55
68	52	30	108.32	74	22	30	81.01	79	52	30	52.91
69	00	00	107.71	74	30	00	80.38	80	00	00	52.26
69	07	30	107.10	74	37	30	79.75	80	07	30	51.62
69	15	00	106.49	74	45	00	79.12	80	15	00	50.97
69	22	30	105.88	74	52	30	78.49	80	22	30	50.32
69	30	00	105.27	75	00	00	77.86	80	30	00	49.68
69	37	30	104.65	75	07	30	77.22	80	37	30	49.03
69	45	00	104.04	75	15	00	76.59	80	45	00	48.38
69	52	30	103.43	75	22	30	75.95	80	52	30	47.73
70	00	00	102.81	75	30	00	75.32	81	00	00	47.08
70	07	30	102.20	75	37	30	74.69	81	07	30	46.44
70	15	00	101.59	75	45	00	74.05	81	15	00	45.79
70	22	30	100.97	75	52	30	73.42	81	22	30	45.14
70	30	00	100.35	76	00	00	72.78	81	30	00	44.49
70	37	30	99.74	76	07	30	72.14	81	37	30	43.84
70	45	00	99.12	76	15	00	71.51	81	45	00	43.19
70	52	30	98.50	76	22	30	70.87	81	52	30	42.54
71	00	00	97.88	76	30	00	70.24	82	00	00	41.89
71	07	30	97.26	76	37	30	69.60	82	07	30	41.24
71	15	00	96.65	76	45	00	68.96	82	15	00	40.59
71	22	30	96.03	76	52	30	68.32	82	22	30	39.94
71	30	00	95.41	77	00	00	67.68	82	30	00	39.29

TABLE 12.—Areas of quadrilaterals of earth's surface of 15' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.	Middle latitude of quadrilateral.			Area in square miles.
°	'	"		°	'	"		°	'	"	
82	37	30	38.64	85	07	30	25.58	87	37	30	12.48
82	45	00	37.99	85	15	00	24.93	87	45	00	11.82
82	52	30	37.34	85	22	30	24.27	87	52	30	11.16
83	00	00	36.69	85	30	00	23.62	88	00	00	10.51
83	07	30	36.03	85	37	30	22.97	88	07	30	9.85
83	15	00	35.38	85	45	00	22.31	88	15	00	9.20
83	22	30	34.73	85	52	30	21.66	88	22	30	8.54
83	30	00	34.08	86	00	00	21.00	88	30	00	7.88
83	37	30	33.42	86	07	30	20.35	88	37	30	7.22
83	45	00	32.77	86	15	00	19.69	88	45	00	6.57
83	52	30	32.12	86	22	30	19.04	88	52	30	5.91
84	00	00	31.47	86	30	00	18.38	89	00	00	5.26
84	07	30	30.81	86	37	30	17.72	89	07	30	4.60
84	15	00	30.16	86	45	00	17.07	89	15	00	3.94
84	22	30	29.51	86	52	30	16.41	89	22	30	3.28
84	30	00	28.86	87	00	00	15.76	89	30	00	2.63
84	37	30	28.20	87	07	30	15.10	89	37	30	1.97
84	45	00	27.54	87	15	00	14.44	89	45	00	1.31
84	52	30	26.89	87	22	30	13.79	89	52	30	0.66
85	00	00	26.24	87	30	00	13.13				

TABLE 13.—Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude.

[From Smithsonian Geographical Tables.]

Middle lati- tude of quadrilateral.		Area in square miles.	Middle lati- tude of quadrilateral.		Area in square miles.	Middle lati- tude of quadrilateral.		Area in square miles.
°	'		°	'		°	'	
0	05	132.01	7	25	130.93	14	45	127.77
0	15	132.01	7	35	130.88	14	55	127.67
0	25	132.01	7	45	130.84	15	05	127.58
0	35	132.00	7	55	130.79	15	15	127.48
0	45	132.00	8	05	130.73	15	25	127.38
0	55	131.99	8	15	130.68	15	35	127.28
1	05	131.99	8	25	130.63	15	45	127.18
1	15	131.98	8	35	130.57	15	55	127.08
1	25	131.97	8	45	130.51	16	05	126.98
1	35	131.96	8	55	130.46	16	15	126.87
1	45	131.95	9	05	130.40	16	25	126.77
1	55	131.94	9	15	130.34	16	35	126.66
2	05	131.93	9	25	130.28	16	45	126.55
2	15	131.91	9	35	130.22	16	55	126.44
2	25	131.90	9	45	130.15	17	05	126.33
2	35	131.88	9	55	130.09	17	15	126.22
2	45	131.86	10	05	130.02	17	25	126.11
2	55	131.84	10	15	129.96	17	35	126.00
3	05	131.82	10	25	129.89	17	45	125.88
3	15	131.80	10	35	129.82	17	55	125.77
3	25	131.78	10	45	129.76	18	05	125.65
3	35	131.76	10	55	129.68	18	15	125.54
3	45	131.74	11	05	129.61	18	25	125.42
3	55	131.71	11	15	129.54	18	35	125.30
4	05	131.68	11	25	129.47	18	45	125.18
4	15	131.66	11	35	129.39	18	55	125.06
4	25	131.63	11	45	129.32	19	05	124.94
4	35	131.60	11	55	129.24	19	15	124.81
4	45	131.57	12	05	129.16	19	25	124.69
4	55	131.54	12	15	129.08	19	35	124.56
5	05	131.50	12	25	129.00	19	45	124.44
5	15	131.47	12	35	128.92	19	55	124.31
5	25	131.44	12	45	128.84	20	05	124.18
5	35	131.40	12	55	128.76	20	15	124.05
5	45	131.36	13	05	128.67	20	25	123.92
5	55	131.33	13	15	128.59	20	35	123.79
6	05	131.29	13	25	128.50	20	45	123.66
6	15	131.25	13	35	128.41	20	55	123.52
6	25	131.21	13	45	128.33	21	05	123.39
6	35	131.16	13	55	128.24	21	15	123.25
6	45	131.12	14	05	128.14	21	25	123.12
6	55	131.07	14	15	128.05	21	35	122.98
7	05	131.03	14	25	127.96	21	45	122.84
7	15	130.98	14	35	127.87	21	55	122.70

TABLE 13.—Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.		Area in square miles.	Middle latitude of quadrilateral.		Area in square miles.	Middle latitude of quadrilateral.		Area in square miles.
°	'		°	'		°	'	
22	05	122.56	29	25	115.37	36	45	106.29
22	15	122.42	29	35	115.18	36	55	106.06
22	25	122.28	29	45	114.99	37	05	105.83
22	35	122.13	29	55	114.81	37	15	105.60
22	45	121.99	30	05	114.62	37	25	105.37
22	55	121.84	30	15	114.43	37	35	105.14
23	05	121.69	30	25	114.24	37	45	104.91
23	15	121.55	30	35	114.04	37	55	104.68
23	25	121.40	30	45	113.85	38	05	104.44
23	35	121.25	30	55	113.66	38	15	104.21
23	45	121.10	31	05	113.47	38	25	103.97
23	55	120.94	31	15	113.27	38	35	103.74
24	05	120.79	31	25	113.07	38	45	103.50
24	15	120.64	31	35	112.88	38	55	103.26
24	25	120.48	31	45	112.68	39	05	103.02
24	35	120.33	31	55	112.48	39	15	102.78
24	45	120.17	32	05	112.28	39	25	102.54
24	55	120.01	32	15	112.08	39	35	102.30
25	05	119.85	32	25	111.87	39	45	102.06
25	15	119.69	32	35	111.67	39	55	101.82
25	25	119.53	32	45	111.47	40	05	101.57
25	35	119.37	32	55	111.26	40	15	101.33
25	45	119.21	33	05	111.06	40	25	101.08
25	55	119.04	33	15	110.85	40	35	100.83
26	05	118.87	33	25	110.64	40	45	100.59
26	15	118.71	33	35	110.43	40	55	100.34
26	25	118.54	33	45	110.22	41	05	100.09
26	35	118.37	33	55	110.01	41	15	99.84
26	45	118.21	34	05	109.80	41	25	99.59
26	55	118.04	34	15	109.59	41	35	99.33
27	05	117.87	34	25	109.37	41	45	99.08
27	15	117.69	34	35	109.16	41	55	98.83
27	25	117.52	34	45	108.94	42	05	98.57
27	35	117.35	34	55	108.73	42	15	98.32
27	45	117.17	35	05	108.51	42	25	98.06
27	55	116.99	35	15	108.29	42	35	97.80
28	05	116.82	35	25	108.07	42	45	97.55
28	15	116.64	35	35	107.85	42	55	97.29
28	25	116.46	35	45	107.63	43	05	97.03
28	35	116.28	35	55	107.41	43	15	96.77
28	45	116.10	36	05	107.19	43	25	96.50
28	55	115.92	36	15	106.96	43	35	96.24
29	05	115.73	36	25	106.74	43	45	95.98
29	15	115.55	36	35	106.51	43	55	95.71

TABLE 13.—*Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued*

[From Smithsonian Geographical Tables.]

Middle lati- tude of quadrilateral.		Area in square miles.	Middle lati- tude of quadrilateral.		Area in square miles.	Middle lati- tude of quadrilateral.		Area in square miles.
°	'		°	'		°	'	
44	05	95.45	50	45	84.21	57	25	71.78
44	15	95.19	50	55	83.91	57	35	71.46
44	25	94.92	51	05	83.61	57	45	71.13
44	35	94.65	51	15	83.31	57	55	70.80
44	45	94.38	51	25	83.01	58	05	70.48
44	55	94.11	51	35	82.71	58	15	70.15
45	05	93.84	51	45	82.41	58	25	69.82
45	15	93.58	51	55	82.11	58	35	69.49
45	25	93.30	52	05	81.81	58	45	69.17
45	35	93.03	52	15	81.51	58	55	68.84
45	45	92.76	52	25	81.20	59	05	68.51
45	55	92.48	52	35	80.90	59	15	68.18
46	05	92.21	52	45	80.60	59	25	67.84
46	15	91.94	52	55	80.29	59	35	67.51
46	25	91.66	53	05	79.98	59	45	67.18
46	35	91.38	53	15	79.68	59	55	66.85
46	45	91.10	53	25	79.37	60	05	66.51
46	55	90.82	53	35	79.06	60	15	66.18
47	05	90.55	53	45	78.75	60	25	65.84
47	15	90.27	53	55	78.44	60	35	65.51
47	25	89.99	54	05	78.13	60	45	65.17
47	35	89.70	54	15	77.82	60	55	64.84
47	45	89.42	54	25	77.51	61	05	64.50
47	55	89.14	54	35	77.19	61	15	64.16
48	05	88.85	54	45	76.88	61	25	63.82
48	15	88.57	54	55	76.57	61	35	63.48
48	25	88.28	55	05	76.25	61	45	63.14
48	35	88.00	55	15	75.94	61	55	62.80
48	45	87.71	55	25	75.62	62	05	62.46
48	55	87.42	55	35	75.30	62	15	62.12
49	05	87.13	55	45	74.99	62	25	61.78
49	15	86.84	55	55	74.67	62	35	61.44
49	25	86.55	56	05	74.35	62	45	61.10
49	35	86.26	56	15	74.03	62	55	60.75
49	45	85.97	56	25	73.71	63	05	60.41
49	55	85.68	56	35	73.39	63	15	60.06
50	05	85.39	56	45	73.07	63	25	59.72
50	15	85.09	56	55	72.75	63	35	59.37
50	25	84.80	57	05	72.43	63	45	59.03
50	35	84.50	57	15	72.10	63	55	58.68

TABLE 13.—Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.	Middle latitude of quadrilateral.	Area in square miles.
° /		° /		° /	
64 05	58.33	70 45	44.05	77 25	29.13
64 15	57.99	70 55	43.69	77 35	28.76
64 25	57.64	71 05	43.32	77 45	28.37
64 35	57.29	71 15	42.95	77 55	27.99
64 45	56.94	71 25	42.58	78 05	27.62
64 55	56.59	71 35	42.22	78 15	27.24
65 05	56.24	71 45	41.85	78 25	26.85
65 15	55.89	71 55	41.48	78 35	26.47
65 25	55.54	72 05	41.11	78 45	26.09
65 35	55.19	72 15	40.74	78 55	25.71
65 45	54.83	72 25	40.37	79 05	25.33
65 55	54.48	72 35	40.00	79 15	24.95
66 05	54.13	72 45	39.63	79 25	24.57
66 15	53.78	72 55	39.26	79 35	24.18
66 25	53.42	73 05	38.89	79 45	23.80
66 35	53.06	73 15	38.52	79 55	23.42
66 45	52.71	73 25	38.15	80 05	23.04
66 55	52.35	73 35	37.78	80 15	22.65
67 05	52.00	73 45	37.41	80 25	22.27
67 15	51.64	73 55	37.03	80 35	21.89
67 25	51.28	74 05	36.66	80 45	21.50
67 35	50.93	74 15	36.29	80 55	21.12
67 45	50.57	74 25	35.91	81 05	20.73
67 55	50.21	74 35	35.54	81 15	20.35
68 05	49.85	74 45	35.17	81 25	19.97
68 15	49.49	74 55	34.79	81 35	19.58
68 25	49.13	75 05	34.42	81 45	19.20
68 35	48.77	75 15	34.04	81 55	18.81
68 45	48.41	75 25	33.66	82 05	18.43
68 55	48.05	75 35	33.29	82 15	18.04
69 05	47.69	75 45	32.91	82 25	17.65
69 15	47.33	75 55	32.53	82 35	17.27
69 25	46.97	76 05	32.16	82 45	16.88
69 35	46.60	76 15	31.78	82 55	16.50
69 45	46.24	76 25	31.40	83 05	16.11
69 55	45.88	76 35	31.03	83 15	15.73
70 05	45.51	76 45	30.65	83 25	15.34
70 15	45.15	76 55	30.27	83 35	14.95
70 25	44.78	77 05	29.89	83 45	14.57
70 35	44.42	77 15	29.51	83 55	14.18

TABLE 13.—Areas of quadrilaterals of earth's surface of 10' extent in latitude and longitude—Continued.

[From Smithsonian Geographical Tables.]

Middle lati- tude of quadrilateral.		Area in square miles.	Middle lati- tude of quadrilateral.		Area in square miles.	Middle lati- tude of quadrilateral.		Area in square miles.
°	'		°	'		°	'	
84	05	13. 79	86	05	9. 14	88	05	4. 47
84	15	13. 40	86	15	8. 75	88	15	4. 09
84	25	13. 02	86	25	8. 36	88	25	3. 70
84	35	12. 63	86	35	7. 97	88	35	3. 31
84	45	12. 24	86	45	7. 59	88	45	2. 92
84	55	11. 86	86	55	7. 20	88	55	2. 53
85	05	11. 47	87	05	6. 81	89	05	2. 14
85	15	11. 08	87	15	6. 42	89	15	1. 75
85	25	10. 69	87	25	6. 03	89	25	1. 36
85	35	10. 30	87	35	5. 64	89	35	0. 97
85	45	9. 92	87	45	5. 25	89	45	0. 58
85	55	9. 53	87	55	4. 86	89	55	0. 19



TABLE 14.—For conversion of arc into time.

°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.
0	0 0	60	4 0	120	8 0	180	12 0	240	16 0	300	20 0	0	0 0	0	0 0	0	0.000
1	0 4	61	4 4	121	8 4	181	12 4	241	16 4	301	20 4	1	0 4	1	0 4	1	0.067
2	0 8	62	4 8	122	8 8	182	12 8	242	16 8	302	20 8	2	0 8	2	0 8	2	0.133
3	0 12	63	4 12	123	8 12	183	12 12	243	16 12	303	20 12	3	0 12	3	0 12	3	0.200
4	0 16	64	4 16	124	8 16	184	12 16	244	16 16	304	20 16	4	0 16	4	0 16	4	0.267
5	0 20	65	4 20	125	8 20	185	12 20	245	16 20	305	20 20	5	0 20	5	0 20	5	0.333
6	0 24	66	4 24	126	8 24	186	12 24	246	16 24	306	20 24	6	0 24	6	0 24	6	0.400
7	0 28	67	4 28	127	8 28	187	12 28	247	16 28	307	20 28	7	0 28	7	0 28	7	0.467
8	0 32	68	4 32	128	8 32	188	12 32	248	16 32	308	20 32	8	0 32	8	0 32	8	0.533
9	0 36	69	4 36	129	8 36	189	12 36	249	16 36	309	20 36	9	0 36	9	0 36	9	0.600
10	0 40	70	4 40	130	8 40	190	12 40	250	16 40	310	20 40	10	0 40	10	0 40	10	0.667
11	0 44	71	4 44	131	8 44	191	12 44	251	16 44	311	20 44	11	0 44	11	0 44	11	0.733
12	0 48	72	4 48	132	8 48	192	12 48	252	16 48	312	20 48	12	0 48	12	0 48	12	0.800
13	0 52	73	4 52	133	8 52	193	12 52	253	16 52	313	20 52	13	0 52	13	0 52	13	0.867
14	0 56	74	4 56	134	8 56	194	12 56	254	16 56	314	20 56	14	0 56	14	0 56	14	0.933
15	1 0	75	5 0	135	9 0	195	13 0	255	17 0	315	21 0	15	1 0	15	1 0	15	1.000
16	1 4	76	5 4	136	9 4	196	13 4	256	17 4	316	21 4	16	1 4	16	1 4	16	1.067
17	1 8	77	5 8	137	9 8	197	13 8	257	17 8	317	21 8	17	1 8	17	1 8	17	1.133
18	1 12	78	5 12	138	9 12	198	13 12	258	17 12	318	21 12	18	1 12	18	1 12	18	1.200
19	1 16	79	5 16	139	9 16	199	13 16	259	17 16	319	21 16	19	1 16	19	1 16	19	1.267
20	1 20	80	5 20	140	9 20	200	13 20	260	17 20	320	21 20	20	1 20	20	1 20	20	1.333
21	1 24	81	5 24	141	9 24	201	13 24	261	17 24	321	21 24	21	1 24	21	1 24	21	1.400
22	1 28	82	5 28	142	9 28	202	13 28	262	17 28	322	21 28	22	1 28	22	1 28	22	1.467
23	1 32	83	5 32	143	9 32	203	13 32	263	17 32	323	21 32	23	1 32	23	1 32	23	1.533
24	1 36	84	5 36	144	9 36	204	13 36	264	17 36	324	21 36	24	1 36	24	1 36	24	1.600
25	1 40	85	5 40	145	9 40	205	13 40	265	17 40	325	21 40	25	1 40	25	1 40	25	1.667
26	1 44	86	5 44	146	9 44	206	13 44	266	17 44	326	21 44	26	1 44	26	1 44	26	1.733
27	1 48	87	5 48	147	9 48	207	13 48	267	17 48	327	21 48	27	1 48	27	1 48	27	1.800
28	1 52	88	5 52	148	9 52	208	13 52	268	17 52	328	21 52	28	1 52	28	1 52	28	1.867
29	1 56	89	5 56	149	9 56	209	13 56	269	17 56	329	21 56	29	1 56	29	1 56	29	1.933
30	2 0	90	6 0	150	10 0	210	14 0	270	18 0	330	22 0	30	2 0	30	2 0	30	2.000
31	2 4	91	6 4	151	10 4	211	14 4	271	18 4	331	22 4	31	2 4	31	2 4	31	2.067
32	2 8	92	6 8	152	10 8	212	14 8	272	18 8	332	22 8	32	2 8	32	2 8	32	2.133
33	2 12	93	6 12	153	10 12	213	14 12	273	18 12	333	22 12	33	2 12	33	2 12	33	2.200
34	2 16	94	6 16	154	10 16	214	14 16	274	18 16	334	22 16	34	2 16	34	2 16	34	2.267
35	2 20	95	6 20	155	10 20	215	14 20	275	18 20	335	22 20	35	2 20	35	2 20	35	2.333
36	2 24	96	6 24	156	10 24	216	14 24	276	18 24	336	22 24	36	2 24	36	2 24	36	2.400
37	2 28	97	6 28	157	10 28	217	14 28	277	18 28	337	22 28	37	2 28	37	2 28	37	2.467
38	2 32	98	6 32	158	10 32	218	14 32	278	18 32	338	22 32	38	2 32	38	2 32	38	2.533
39	2 36	99	6 36	159	10 36	219	14 36	279	18 36	339	22 36	39	2 36	39	2 36	39	2.600
40	2 40	100	6 40	160	10 40	220	14 40	280	18 40	340	22 40	40	2 40	40	2 40	40	2.667
41	2 44	101	6 44	161	10 44	221	14 44	281	18 44	341	22 44	41	2 44	41	2 44	41	2.733
42	2 48	102	6 48	162	10 48	222	14 48	282	18 48	342	22 48	42	2 48	42	2 48	42	2.800
43	2 52	103	6 52	163	10 52	223	14 52	283	18 52	343	22 52	43	2 52	43	2 52	43	2.867
44	2 56	104	6 56	164	10 56	224	14 56	284	18 56	344	22 56	44	2 56	44	2 56	44	2.933
45	3 0	105	7 0	165	11 0	225	15 0	285	19 0	345	23 0	45	3 0	45	3 0	45	3.000
46	3 4	106	7 4	166	11 4	226	15 4	286	19 4	346	23 4	46	3 4	46	3 4	46	3.067
47	3 8	107	7 8	167	11 8	227	15 8	287	19 8	347	23 8	47	3 8	47	3 8	47	3.133
48	3 12	108	7 12	168	11 12	228	15 12	288	19 12	348	23 12	48	3 12	48	3 12	48	3.200
49	3 16	109	7 16	169	11 16	229	15 16	289	19 16	349	23 16	49	3 16	49	3 16	49	3.267
50	3 20	110	7 20	170	11 20	230	15 20	290	19 20	350	23 20	50	3 20	50	3 20	50	3.333
51	3 24	111	7 24	171	11 24	231	15 24	291	19 24	351	23 24	51	3 24	51	3 24	51	3.400
52	3 28	112	7 28	172	11 28	232	15 28	292	19 28	352	23 28	52	3 28	52	3 28	52	3.467
53	3 32	113	7 32	173	11 32	233	15 32	293	19 32	353	23 32	53	3 32	53	3 32	53	3.533
54	3 36	114	7 36	174	11 36	234	15 36	294	19 36	354	23 36	54	3 36	54	3 36	54	3.600
55	3 40	115	7 40	175	11 40	235	15 40	295	19 40	355	23 40	55	3 40	55	3 40	55	3.667
56	3 44	116	7 44	176	11 44	236	15 44	296	19 44	356	23 44	56	3 44	56	3 44	56	3.733
57	3 48	117	7 48	177	11 48	237	15 48	297	19 48	357	23 48	57	3 48	57	3 48	57	3.800
58	3 52	118	7 52	178	11 52	238	15 52	298	19 52	358	23 52	58	3 52	58	3 52	58	3.867
59	3 56	119	7 56	179	11 56	239	15 56	299	19 56	359	23 56	59	3 56	59	3 56	59	3.933
60	4 0	120	8 0	180	12 0	240	16 0	300	20 0	360	24 0	60	4 0	60	4 0	60	4.000

TABLE 15.—For conversion of time into arc.

Hours of time into arc.											
Time.	Arc.	Time.	Arc.	Time.	Arc.	Time.	Arc.	Time.	Arc.	Time.	Arc.
hrs.	°	hrs.	°	hrs.	°	hrs.	°	hrs.	°	hrs.	°
1	15	5	75	9	135	13	195	17	255	21	315
2	30	6	90	10	150	14	210	18	270	22	330
3	45	7	105	11	165	15	225	19	285	23	345
4	60	8	120	12	180	16	240	20	300	24	360

Minutes of time into arc.						Seconds of time into arc.					
m.	°	'	m.	°	'	s.	'	"	s.	'	"
1	0	15	21	5	15	41	10	15	1	0	15
2	0	30	22	5	30	42	10	30	2	0	30
3	0	45	23	5	45	43	10	45	3	0	45
4	1	0	24	6	0	44	11	0	4	1	0
5	1	15	25	6	15	45	11	15	5	1	15
6	1	30	26	6	30	46	11	30	6	1	30
7	1	45	27	6	45	47	11	45	7	1	45
8	2	0	28	7	0	48	12	0	8	2	0
9	2	15	29	7	15	49	12	15	9	2	15
10	2	30	30	7	30	50	12	30	10	2	30
11	2	45	31	7	45	51	12	45	11	2	45
12	3	0	32	8	0	52	13	0	12	3	0
13	3	15	33	8	15	53	13	15	13	3	15
14	3	30	34	8	30	54	13	30	14	3	30
15	3	45	35	8	45	55	13	45	15	3	45
16	4	0	36	9	0	56	14	0	16	4	0
17	4	15	37	9	15	57	14	15	17	4	15
18	4	30	38	9	30	58	14	30	18	4	30
19	4	45	39	9	45	59	14	45	19	4	45
20	5	0	40	10	0	60	15	0	20	5	0

Hundredths of a second of time into arc.											
Hundredths of a second of time.	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09	
s.	"	"	"	"	"	"	"	"	"	"	"
0.00	0.00	0.15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	
.10	1.50	1.65	1.80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	
.20	3.00	3.15	3.30	3.45	3.60	3.75	3.90	4.05	4.20	4.35	
.30	4.50	4.65	4.80	4.95	5.10	5.25	5.40	5.55	5.70	5.85	
.40	6.00	6.15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	
0.50	7.50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	
.60	9.00	9.15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	
.70	10.50	10.65	10.80	10.95	11.10	11.25	11.40	11.55	11.70	11.85	
.80	12.00	12.15	12.30	12.45	12.60	12.75	12.90	13.05	13.20	13.35	
.90	13.50	13.65	13.80	13.95	14.10	14.25	14.40	14.55	14.70	14.85	

TABLE 16.—For conversion of mean time into sidereal time.

s	m 0			m 1			m 2			m 3								
0	h	m	s	h	m	s	h	m	s	h	m	s	s 0.00	m 0	s 0	s 0.50	m 3	s 3
	0	0	0	6	5	15	12	10	29	18	15	44						
1	0	6	5	6	11	20	12	16	34	18	21	49	0.01	0	4	0.51	3	6
2	0	12	10	6	17	25	12	22	40	18	27	54	0.02	0	7	0.52	3	10
3	0	18	16	6	23	30	12	28	45	18	33	59	0.03	0	11	0.53	3	14
4	0	24	21	6	29	36	12	34	50	18	40	5	0.04	0	15	0.54	3	17
5	0	30	26	6	35	41	12	40	55	18	46	10	0.05	0	18	0.55	3	21
6	0	36	31	6	41	46	12	47	1	18	52	15	0.06	0	22	0.56	3	25
7	0	42	37	6	47	51	12	53	6	18	58	20	0.07	0	26	0.57	3	28
8	0	48	42	6	53	56	12	59	11	19	4	26	0.08	0	29	0.58	3	32
9	0	54	47	7	0	2	13	5	16	19	10	31	0.09	0	33	0.59	3	35
10	1	0	52	7	6	7	13	11	21	19	16	36	0.10	0	37	0.60	3	39
11	1	6	58	7	12	12	13	17	27	19	22	41	0.11	0	40	0.61	3	43
12	1	13	3	7	18	17	13	23	32	19	28	47	0.12	0	44	0.62	3	46
13	1	19	8	7	24	23	13	29	37	19	34	52	0.13	0	47	0.63	3	50
14	1	25	13	7	30	28	13	35	42	19	40	57	0.14	0	51	0.64	3	54
15	1	31	19	7	36	33	13	41	48	19	47	2	0.15	0	55	0.65	3	57
16	1	37	24	7	42	38	13	47	53	19	53	7	0.16	0	58	0.66	4	1
17	1	43	29	7	48	44	13	53	58	19	59	13	0.17	1	2	0.67	4	5
18	1	49	34	7	54	49	14	0	3	20	5	18	0.18	1	6	0.68	4	8
19	1	55	40	8	0	54	14	6	9	20	11	23	0.19	1	9	0.69	4	12
20	2	1	45	8	6	59	14	12	14	20	17	28	0.20	1	13	0.70	4	16
21	2	7	50	8	13	5	14	18	19	20	23	34	0.21	1	17	0.71	4	19
22	2	13	55	8	19	10	14	24	24	20	29	39	0.22	1	20	0.72	4	23
23	2	20	1	8	25	15	14	30	30	20	35	44	0.23	1	24	0.73	4	27
24	2	26	6	8	31	20	14	36	35	20	41	49	0.24	1	28	0.74	4	30
25	2	32	11	8	37	26	14	42	40	20	47	55	0.25	1	31	0.75	4	34
26	2	38	16	8	43	31	14	48	45	20	54	0	0.26	1	35	0.76	4	38
27	2	44	22	8	49	36	14	54	51	21	0	5	0.27	1	39	0.77	4	41
28	2	50	27	8	55	41	15	0	56	21	6	10	0.28	1	42	0.78	4	45
29	2	56	32	9	1	47	15	7	1	21	12	16	0.29	1	46	0.79	4	49
30	3	2	37	9	7	52	15	13	6	21	18	21	0.30	1	50	0.80	4	52
31	3	8	43	9	13	57	15	19	12	21	24	26	0.31	1	53	0.81	4	56
32	3	14	48	9	20	2	15	25	17	21	30	31	0.32	1	57	0.82	4	59
33	3	20	53	9	26	8	15	31	22	21	36	37	0.33	2	1	0.83	5	3
34	3	26	58	9	32	13	15	37	27	21	42	42	0.34	2	4	0.84	5	7
35	3	33	3	9	38	18	15	43	33	21	48	47	0.35	2	8	0.85	5	10
36	3	39	9	9	44	23	15	49	38	21	54	52	0.36	2	11	0.86	5	14
37	3	45	14	9	50	28	15	55	43	22	0	58	0.37	2	15	0.87	5	18
38	3	51	19	9	56	34	16	1	48	22	7	3	0.38	2	19	0.88	5	21
39	3	57	24	10	2	39	16	7	54	22	13	8	0.39	2	22	0.89	5	25
40	4	3	30	10	8	44	16	13	59	22	19	13	0.40	2	26	0.90	5	29
41	4	9	35	10	14	49	16	20	4	22	25	19	0.41	2	30	0.91	5	32
42	4	15	40	10	20	55	16	26	9	22	31	24	0.42	2	33	0.92	5	36
43	4	21	45	10	27	0	16	32	14	22	37	29	0.43	2	37	0.93	5	40
44	4	27	51	10	33	5	16	38	20	22	43	34	0.44	2	41	0.94	5	43
45	4	33	56	10	39	10	16	44	25	22	49	39	0.45	2	44	0.95	5	47
46	4	40	1	10	45	16	16	50	30	22	55	45	0.46	2	48	0.96	5	51
47	4	46	6	10	51	21	16	56	35	23	1	50	0.47	2	52	0.97	5	54
48	4	52	12	10	57	26	17	2	41	23	7	55	0.48	2	55	0.98	5	58
49	4	58	17	11	3	31	17	8	46	23	14	0	0.49	2	59	0.99	6	2
50	5	4	22	11	9	37	17	14	51	23	20	6	0.50	3	3	1.00	6	5
51	5	10	27	11	15	42	17	20	56	23	26	11	<div>Example: Let the given mean time be 14<sup>h</sup> 57<sup>m</sup> 32<sup>s</sup>. 56. The table gives first for 14<sup>h</sup> 54<sup>m</sup> 51<sup>s</sup>      2<sup>m</sup> 27<sup>s</sup> then for      2    41.56      0.44 <div>2 27.44</div> The sum 14<sup>h</sup> 57<sup>m</sup> 32<sup>s</sup>. 56 + 2<sup>m</sup> 27<sup>s</sup>. 44 = 15<sup>h</sup> 0<sup>m</sup> 0<sup>s</sup> is the required sidereal time.</div>					
52	5	16	33	11	21	47	17	27	2	23	32	16						
53	5	22	38	11	27	52	17	33	7	23	38	21						
54	5	28	43	11	33	58	17	39	12	23	44	27						
55	5	34	48	11	40	3	17	45	17	23	50	32						
56	5	40	54	11	46	8	17	51	23	23	56	37						
57	5	46	59	11	52	13	17	57	28	24	2	42						
58	5	53	4	11	58	19	18	3	33	24	8	48						
59	5	59	9	12	4	24	18	9	38	24	14	53						
60	6	5	15	12	10	29	18	15	44	24	20	58						

**TABLE 17.**—*For conversion of sidereal time into mean time.*

s	m 0			m 1			m 2			m 3								
0	h 0	m 0	s 0	h 6	m 6	s 15	h 12	m 12	s 29	h 18	m 18	s 44	s 0.00	m 0	s 0	s 0.50	m 3	s 3
1	0	6	6	6	12	21	12	18	35	18	24	50	0.01	0	4	0.51	3	7
2	0	12	12	6	18	27	12	24	42	18	30	56	0.02	0	7	0.52	3	10
3	0	18	19	6	24	33	12	30	48	18	37	2	0.03	0	11	0.53	3	14
4	0	24	25	6	30	40	12	36	54	18	43	9	0.04	0	15	0.54	3	18
5	0	30	31	6	36	46	12	43	0	18	49	15	0.05	0	18	0.55	3	21
6	0	36	37	6	42	52	12	49	7	18	55	21	0.06	0	22	0.56	3	25
7	0	42	44	6	48	58	12	55	13	19	1	27	0.07	0	26	0.57	3	29
8	0	48	50	6	55	4	13	1	19	19	7	34	0.08	0	29	0.58	3	32
9	0	54	56	7	1	11	13	7	25	19	13	40	0.09	0	33	0.59	3	36
10	1	1	2	7	7	17	13	13	31	19	19	46	0.10	0	37	0.60	3	40
11	1	7	9	7	13	23	13	19	38	19	25	52	0.11	0	40	0.61	3	43
12	1	13	15	7	19	29	13	25	44	19	31	59	0.12	0	44	0.62	3	47
13	1	19	21	7	25	36	13	31	50	19	38	5	0.13	0	43	0.63	3	51
14	1	25	27	7	31	42	13	37	56	19	44	11	0.14	0	51	0.64	3	54
15	1	31	34	7	37	48	13	44	3	19	50	17	0.15	0	55	0.65	3	58
16	1	37	40	7	43	54	13	50	9	19	56	23	0.16	0	59	0.66	4	2
17	1	43	46	7	50	1	13	56	15	20	2	30	0.17	1	2	0.67	4	5
18	1	49	52	7	56	7	14	2	21	20	8	36	0.18	1	6	0.68	4	9
19	1	55	59	8	2	13	14	8	28	20	14	42	0.19	1	10	0.69	4	13
20	2	2	5	8	8	19	14	14	34	20	20	48	0.20	1	13	0.70	4	16
21	2	8	11	8	14	26	14	20	40	20	26	55	0.21	1	17	0.71	4	20
22	2	14	17	8	20	32	14	26	46	20	33	1	0.22	1	21	0.72	4	24
23	2	20	24	8	26	38	14	32	53	20	39	7	0.23	1	24	0.73	4	27
24	2	26	30	8	32	44	14	38	59	20	45	13	0.24	1	28	0.74	4	31
25	2	32	36	8	38	51	14	45	5	20	51	20	0.25	1	32	0.75	4	35
26	2	38	42	8	44	57	14	51	11	20	57	26	0.26	1	35	0.76	4	38
27	2	44	49	8	51	3	14	57	18	21	3	32	0.27	1	39	0.77	4	42
28	2	50	55	8	57	9	15	3	24	21	9	38	0.28	1	43	0.78	4	46
29	2	57	1	9	3	16	15	9	30	21	15	45	0.29	1	46	0.79	4	49
30	3	3	7	9	9	22	15	15	36	21	21	51	0.30	1	50	0.80	4	53
31	3	9	14	9	15	28	15	21	43	21	27	57	0.31	1	54	0.81	4	57
32	3	15	20	9	21	34	15	27	49	21	34	3	0.32	1	57	0.82	5	0
33	3	21	26	9	27	41	15	33	55	21	40	10	0.33	2	1	0.83	5	4
34	3	27	32	9	33	47	15	40	1	21	46	16	0.34	2	5	0.84	5	8
35	3	33	38	9	39	53	15	46	8	21	52	22	0.35	2	8	0.85	5	11
36	3	39	45	9	45	59	15	52	14	21	58	28	0.36	2	12	0.86	5	15
37	3	45	51	9	52	5	15	58	20	22	4	35	0.37	2	16	0.87	5	19
38	3	51	57	9	58	12	16	4	26	22	10	41	0.38	2	19	0.88	5	22
39	3	58	3	10	4	18	16	10	33	22	16	47	0.39	2	23	0.89	5	26
40	4	4	10	10	10	24	16	16	39	22	22	53	0.40	2	26	0.90	5	30
41	4	10	16	10	16	30	16	22	45	22	29	0	0.41	2	30	0.91	5	33
42	4	16	22	10	22	37	16	28	51	22	35	6	0.42	2	34	0.92	5	37
43	4	22	28	10	28	43	16	34	57	22	41	12	0.43	2	37	0.93	5	41
44	4	28	35	10	34	49	16	41	4	22	47	18	0.44	2	41	0.94	5	44
45	4	34	41	10	40	55	16	47	10	22	53	24	0.45	2	45	0.95	5	48
46	4	40	47	10	47	2	16	53	16	22	59	31	0.46	2	48	0.96	5	52
47	4	46	53	10	53	8	16	59	22	23	5	37	0.47	2	52	0.97	5	55
48	4	53	0	10	59	14	17	5	29	23	11	43	0.48	2	56	0.98	5	59
49	4	59	6	11	5	20	17	11	35	23	17	49	0.49	2	59	0.99	6	3
50	5	5	12	11	11	27	17	17	41	23	23	56	0.50	3	3	1.00	6	6
51	5	11	18	11	17	33	17	23	47	23	30	2	<div>Example: Given <math>15^h 0^m 0^s</math>. The table gives first for <math>14^h 57^m 18^s</math> <math>2^m 27^s</math> then for <math>2^m 42^s</math> <math>0.44</math> <div><div>15 0 0</div><div>2 27.44</div></div> The difference <math>15^h 0^m 0^s - 2^m 27^s .44 = 14^h 57^m 32^s .56</math> is the required mean time.</div>	23	36	8		
52	5	17	25	11	23	39	17	29	54	23	42	14						
53	5	23	31	11	29	45	17	36	0	23	48	21						
54	5	29	37	11	35	52	17	42	6	23	54	27						
55	5	35	43	11	41	58	17	48	12	24	0	33						
56	5	41	50	11	48	4	17	54	19	24	6	39						
57	5	47	56	11	54	10	18	0	25	24	12	46						
58	5	54	2	12	0	17	18	6	31	24	18	52						
59	6	0	8	12	6	23	18	12	37	24	24	58						
60	6	6	15	12	12	29	18	18	44	24	24	58						

TABLE 18.—*For interconversion of feet and decimals of a mile.*

Feet.	Miles.	Feet.	Miles.	Feet.	Miles.	Feet.	Miles.
53	.01	1373	.26	2693	.51	4013	.76
106	.02	1426	.27	2746	.52	4066	.77
158	.03	1478	.28	2798	.53	4118	.78
211	.04	1531	.29	2851	.54	4171	.79
264	.05	1584	.30	2904	.55	4224	.80
317	.06	1637	.31	2957	.56	4277	.81
370	.07	1690	.32	3010	.57	4330	.82
422	.08	1742	.33	3062	.58	4382	.83
475	.09	1795	.34	3115	.59	4435	.84
528	.10	1848	.35	3168	.60	4488	.85
581	.11	1901	.36	3221	.61	4541	.86
634	.12	1954	.37	3274	.62	4594	.87
686	.13	2006	.38	3326	.63	4646	.88
739	.14	2059	.39	3379	.64	4699	.89
792	.15	2112	.40	3432	.65	4752	.90
845	.16	2165	.41	3485	.66	4805	.91
898	.17	2218	.42	3538	.67	4858	.92
950	.18	2270	.43	3590	.68	4910	.93
1003	.19	2323	.44	3643	.69	4963	.94
1056	.20	2376	.45	3696	.70	5016	.95
1109	.21	2429	.46	3749	.71	5069	.96
1162	.22	2482	.47	3802	.72	5122	.97
1214	.23	2534	.48	3854	.73	5174	.98
1267	.24	2587	.49	3907	.74	5227	.99
1320	.25	2640	.50	3960	.75	5280	1.00

TABLE 19.—*Converting wheel revolutions into hundredths of a mile.*

[Prepared by J. H. Jennings.]

[Scale divisions outside; revolutions inside.]

CIRCUMFERENCE OF WHEEL, 9.5 FEET

	1	2	3	4	5	6	7	8	9	10
0	6	11	17	22	28	33	39	44	50	56
10	61	67	72	78	83	89	94	100	105	111
20	117	122	128	133	139	144	150	155	161	167
30	172	178	183	189	194	200	205	211	216	222
40	228	233	239	244	250	255	261	266	272	278
50	283	289	294	300	305	311	316	322	328	333
60	339	344	350	355	361	366	372	378	383	389
70	394	400	405	411	416	422	428	433	439	444
80	450	455	461	466	472	478	483	489	494	500
90	506	511	516	522	528	533	539	544	550	555

CIRCUMFERENCE OF WHEEL, 9.6 FEET

	1	2	3	4	5	6	7	8	9	10
0	5	11	16	22	27	33	38	44	50	55
10	60	66	72	77	82	88	93	99	105	110
20	116	121	126	132	137	143	148	154	159	165
30	171	177	182	188	193	199	204	209	215	220
40	225	231	236	242	247	253	258	264	270	275
50	281	286	292	297	303	308	314	319	325	330
60	336	341	347	352	358	363	369	374	380	385
70	391	396	402	407	413	418	424	429	435	440
80	446	451	457	462	468	473	479	484	490	495
90	501	506	512	517	523	528	534	539	544	550

CIRCUMFERENCE OF WHEEL, 9.7 FEET.

	1	2	3	4	5	6	7	8	9	10
0	5	11	16	22	27	33	38	44	49	54
10	60	65	71	76	81	87	92	98	103	109
20	114	120	125	131	136	142	147	152	158	163
30	169	174	179	185	190	196	201	206	212	218
40	223	228	234	239	245	250	256	261	267	272
50	277	283	288	294	299	305	310	316	321	326
60	331	337	342	348	353	359	364	370	376	381
70	386	392	397	403	408	414	419	424	429	435
80	441	446	451	457	462	468	473	479	484	490
90	495	500	506	511	517	522	528	533	539	544

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

CIRCUMFERENCE OF WHEEL, 9.8 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	22	27	32	38	43	49	54
10	59	65	70	75	81	86	91	97	102	108
20	113	119	124	129	135	140	145	151	156	162
30	167	172	178	183	189	194	199	205	211	216
40	221	226	231	237	242	248	253	259	265	270
50	275	280	286	291	296	302	307	313	318	324
60	329	334	339	345	350	356	361	366	372	377
70	383	388	394	400	405	410	415	421	426	431
80	437	442	447	453	458	464	469	474	480	485
90	490	496	501	506	512	517	522	528	533	539

CIRCUMFERENCE OF WHEEL, 9.9 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	21	27	32	37	43	48	53
10	59	64	69	75	80	85	91	96	101	107
20	112	117	122	128	133	138	144	149	155	160
30	165	170	176	181	186	192	197	203	208	213
40	219	224	229	235	240	245	251	256	261	267
50	272	277	282	288	293	298	304	309	314	320
60	325	330	336	341	346	352	357	362	368	373
70	378	384	389	394	400	405	410	416	421	426
80	432	437	442	448	453	458	464	469	474	480
90	485	490	496	501	506	512	517	522	528	533

CIRCUMFERENCE OF WHEEL, 10 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	11	16	21	26	32	37	42	48	53
10	58	63	69	75	80	85	90	96	101	106
20	111	116	121	127	132	137	143	148	153	158
30	164	169	174	180	185	190	195	201	206	211
40	217	222	227	232	238	243	248	253	259	264
50	269	275	280	285	290	296	301	306	311	317
60	322	327	333	338	343	349	354	359	364	370
70	375	380	385	391	396	401	406	412	417	422
80	428	433	438	444	449	454	459	465	470	475
90	481	486	491	496	502	507	512	517	523	528

TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

CIRCUMFERENCE OF WHEEL, 10.1 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	16	21	26	31	36	41	47	52
10	58	63	68	73	79	84	89	94	100	105
20	110	115	121	126	131	136	142	147	152	157
30	162	167	173	178	183	188	193	199	204	209
40	214	220	226	231	236	241	247	252	257	262
50	267	272	277	282	288	293	298	303	308	314
60	319	324	329	334	340	345	350	355	361	366
70	371	376	381	386	392	397	402	408	413	418
80	424	429	434	439	445	450	455	460	466	471
90	476	481	486	492	497	502	507	513	518	523

CIRCUMFERENCE OF WHEEL, 10.2 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	16	21	26	31	36	41	47	52
10	57	62	67	73	78	83	88	93	98	104
20	109	114	119	124	130	135	140	145	150	155
30	161	166	171	176	181	186	191	197	202	207
40	212	218	224	229	234	239	244	249	254	259
50	264	269	275	280	285	290	295	300	306	311
60	316	321	326	332	337	342	347	352	357	363
70	368	373	378	383	388	394	399	404	409	414
80	419	425	430	435	440	446	451	456	461	466
90	471	476	481	487	492	497	503	508	513	518

CIRCUMFERENCE OF WHEEL, 10.3 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	26	31	36	41	46	51
10	56	62	67	72	77	82	87	92	97	103
20	108	113	118	123	128	133	138	144	149	154
30	159	164	169	174	180	185	190	195	200	204
40	209	214	219	224	230	235	240	245	250	256
50	262	267	272	277	282	287	292	297	303	308
60	313	318	323	328	333	338	344	349	354	359
70	364	369	374	380	385	390	395	400	405	410
80	416	421	426	431	436	441	446	451	457	462
90	467	472	477	482	487	492	498	503	508	513



TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

CIRCUMFERENCE OF WHEEL, 10.4 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	36	41	46	51
10	56	61	66	71	76	81	86	91	97	102
20	107	112	117	122	127	132	137	142	147	152
30	157	163	168	173	178	183	188	193	198	203
40	208	213	218	223	228	233	238	244	249	254
50	259	264	269	274	279	284	289	295	300	305
60	310	315	320	325	330	335	340	345	350	356
70	361	366	371	376	381	386	391	396	401	406
80	411	416	421	426	432	437	442	447	452	457
90	462	467	472	478	483	488	493	498	503	508

CIRCUMFERENCE OF WHEEL, 10.5 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	45	50
10	55	60	65	70	75	80	85	90	95	101
20	106	111	116	121	126	131	136	141	146	151
30	156	161	166	171	176	181	186	191	196	201
40	206	211	216	221	226	231	236	241	246	251
50	257	262	267	272	277	282	287	292	297	302
60	307	312	317	322	327	332	337	342	347	352
70	357	362	367	372	377	382	387	392	397	402
80	407	412	417	422	428	433	438	443	448	453
90	458	463	468	473	478	483	488	493	498	503

CIRCUMFERENCE OF WHEEL, 10.6 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	45	50
10	55	60	65	70	75	80	85	90	95	100
20	105	110	115	120	125	130	135	140	144	149
30	154	159	164	169	174	179	184	189	194	199
40	204	209	214	219	224	229	234	239	244	249
50	254	259	264	269	274	279	284	289	294	299
60	304	309	314	319	324	329	334	339	344	349
70	354	359	364	369	374	379	384	389	393	398
80	403	408	413	418	423	428	433	438	443	448
90	453	458	463	468	473	478	483	488	493	498

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 10.7 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	25	30	35	40	44	49
10	54	59	64	69	74	79	84	89	94	99
20	104	109	114	119	123	128	133	138	143	148
30	153	158	163	168	173	178	183	188	193	198
40	203	207	212	217	222	227	232	237	242	247
50	252	257	262	267	272	277	282	287	291	296
60	301	306	311	316	321	326	331	336	341	346
70	351	356	361	366	371	375	380	385	390	395
80	400	405	410	415	420	425	430	435	440	445
90	450	454	459	464	469	474	479	484	489	494

## CIRCUMFERENCE OF WHEEL, 10.8 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	20	24	29	34	39	44	49
10	54	59	64	69	73	78	83	88	93	98
20	103	108	113	118	122	127	132	137	142	147
30	152	156	161	166	171	176	181	186	191	196
40	200	205	210	215	220	225	230	235	240	244
50	249	254	259	264	269	274	279	283	288	293
60	298	303	308	313	318	323	328	332	337	341
70	346	351	356	361	366	371	376	381	386	391
80	396	401	406	411	416	421	425	430	435	440
90	445	450	455	460	464	469	474	479	484	489

## CIRCUMFERENCE OF WHEEL, 10.9 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	15	19	24	29	34	39	44	48
10	53	58	63	68	73	78	82	87	92	97
20	102	107	111	116	121	126	131	136	141	145
30	150	155	160	165	170	175	179	184	189	193
40	197	202	207	212	217	222	227	232	237	242
50	247	252	257	261	266	271	276	281	286	290
60	295	300	305	310	315	319	324	329	334	339
70	344	349	353	358	363	368	373	378	383	387
80	392	397	402	407	411	416	421	426	431	436
90	440	445	450	455	460	465	469	474	479	484

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 11.0 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	14	19	24	29	33	38	43	48
10	53	57	62	67	72	76	81	86	91	96
20	101	106	110	115	119	124	129	134	139	144
30	149	154	158	163	168	173	178	182	187	192
40	197	202	207	211	216	221	225	230	235	240
50	245	250	254	259	263	268	273	278	283	288
60	293	298	302	307	312	317	321	326	331	336
70	341	346	350	355	360	365	369	374	379	384
80	389	394	398	403	408	413	417	422	427	432
90	437	442	446	451	456	461	465	470	475	480

## CIRCUMFERENCE OF WHEEL, 11.1 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	10	14	19	24	29	33	38	43	48
10	52	57	62	66	71	76	81	85	90	95
20	100	104	109	114	119	124	129	133	138	143
30	147	152	157	161	166	171	176	180	185	190
40	195	200	205	209	214	219	224	229	233	238
50	243	248	252	257	262	267	271	276	281	286
60	290	295	300	305	309	314	319	324	328	333
70	338	343	347	352	357	362	367	371	376	381
80	386	390	395	400	405	409	414	419	424	428
90	433	438	443	447	452	457	462	466	471	476

## CIRCUMFERENCE OF WHEEL, 11.2 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	19	24	28	33	38	42	47
10	52	57	62	66	71	76	80	84	89	94
20	99	104	108	113	117	122	127	132	137	141
30	146	151	155	160	165	169	174	179	184	188
40	193	198	203	207	212	217	222	226	231	236
50	240	245	250	255	259	264	269	274	278	283
60	287	292	297	302	307	312	316	321	326	330
70	334	339	344	348	353	358	363	367	372	377
80	382	387	391	396	400	405	410	415	419	424
90	429	434	438	443	447	452	456	461	465	471

TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

## CIRCUMFERENCE OF WHEEL, 11.3 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	19	23	28	33	37	42	47
10	51	56	61	65	70	74	79	83	88	93
20	98	103	108	112	117	122	126	131	135	140
30	145	150	154	159	164	168	173	178	183	187
40	191	196	200	205	210	215	220	224	229	234
50	238	243	248	252	257	261	266	271	276	280
60	285	290	294	299	304	308	313	318	322	327
70	332	336	341	346	350	355	360	364	370	374
80	378	383	387	392	397	402	406	411	416	420
90	425	430	434	439	444	448	453	458	462	467

## CIRCUMFERENCE OF WHEEL, 11.4 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	18	23	28	32	37	42	46
10	50	56	60	65	69	74	79	83	88	93
20	97	102	107	111	116	120	125	129	134	139
30	143	148	152	157	162	167	171	176	180	185
40	190	195	199	204	208	213	217	222	227	231
50	236	241	245	250	255	259	264	269	273	278
60	282	287	291	296	301	306	310	315	319	324
70	329	333	338	343	347	352	357	361	366	370
80	375	380	384	389	394	398	403	407	412	417
90	421	426	431	435	440	445	449	454	458	463

## CIRCUMFERENCE OF WHEEL, 11.5 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	18	23	28	32	37	41	46
10	50	55	59	63	68	72	77	82	87	92
20	97	101	105	110	114	119	124	128	133	138
30	142	147	151	156	161	165	170	174	179	184
40	189	193	197	202	207	211	216	220	225	229
50	234	239	243	248	253	257	262	266	271	275
60	280	285	289	294	298	303	308	312	317	321
70	326	331	335	340	344	349	353	358	363	367
80	372	377	381	386	390	395	399	404	409	413
90	418	422	427	432	436	441	445	450	454	459

TABLE 19.—*Converting wheel revolutions into hundredths of a mile—Continued.*

## CIRCUMFERENCE OF WHEEL, 11.6 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	14	18	23	27	32	36	41	46
10	50	55	59	64	68	73	77	82	87	91
20	96	100	104	109	114	118	123	127	132	136
30	141	146	150	155	159	164	168	173	178	182
40	187	191	195	200	205	209	214	218	223	227
50	232	237	241	246	250	255	259	264	269	273
60	278	282	287	291	296	300	305	309	314	318
70	323	328	332	337	341	346	350	355	360	364
80	369	373	378	382	387	391	396	400	405	410
90	414	419	423	428	432	437	441	446	450	455

## CIRCUMFERENCE OF WHEEL, 11.7 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	5	9	13	18	23	27	32	36	41	45
10	50	54	59	63	68	72	77	81	86	90
20	96	99	104	108	113	117	122	126	131	135
30	140	144	149	153	158	162	167	171	176	180
40	185	189	194	198	203	207	212	217	221	226
50	230	235	239	244	248	253	257	262	266	271
60	275	280	284	289	293	298	302	307	311	316
70	320	325	329	334	338	343	347	352	356	361
80	365	370	374	379	383	388	392	397	401	406
90	410	415	419	424	428	433	437	442	446	451

## CIRCUMFERENCE OF WHEEL, 11.8 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	18	22	27	32	36	40	45
10	49	53	58	62	67	72	76	80	85	89
20	94	98	103	107	112	116	121	125	130	134
30	139	143	148	152	157	161	165	170	174	179
40	183	187	192	197	201	206	210	215	219	223
50	228	232	237	241	246	250	255	259	264	268
60	273	277	282	286	291	295	300	304	309	313
70	317	321	326	330	335	339	344	348	353	358
80	362	367	372	376	380	385	389	393	398	402
90	407	411	416	420	425	429	434	438	443	447

TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

CIRCUMFERENCE OF WHEEL, 11.9 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	18	22	27	31	35	40	44
10	49	53	58	62	67	71	76	80	84	89
20	93	98	102	107	111	115	120	124	129	133
30	138	142	146	151	155	160	164	169	173	178
40	182	187	191	195	200	204	209	213	218	222
50	226	231	235	240	244	249	253	258	262	266
60	271	275	280	284	289	293	298	302	306	311
70	315	320	324	329	333	338	342	346	350	355
80	360	364	369	373	377	382	386	391	395	399
90	404	409	413	417	422	426	431	435	440	444

CIRCUMFERENCE OF WHEEL, 12 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	18	22	26	31	35	40	44
10	48	53	57	62	66	70	75	79	84	88
20	91	96	100	104	109	113	118	122	128	132
30	136	141	145	150	154	158	163	168	172	176
40	180	185	189	194	198	202	207	211	216	220
50	224	229	233	238	242	246	251	255	260	264
60	268	273	277	281	286	290	295	299	304	308
70	312	317	321	326	330	334	339	343	348	352
80	356	361	365	370	374	378	383	388	392	396
90	400	405	409	414	418	422	427	431	436	440

CIRCUMFERENCE OF WHEEL, 12.1 FEET.

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	17	22	26	31	35	39	44
10	48	53	57	61	66	70	75	79	83	87
20	91	96	100	105	109	113	118	122	126	131
30	135	139	144	148	153	157	161	165	170	174
40	178	183	187	192	196	201	205	209	214	218
50	222	227	231	235	240	244	249	253	257	262
60	266	270	275	279	283	288	292	296	301	305
70	310	314	318	323	327	331	336	340	344	349
80	353	358	362	366	370	375	379	384	388	392
90	397	401	405	410	414	419	423	427	432	436

TABLE 19.—*Converting wheel revolutions into hundredths of a mile*—Continued.

CIRCUMFERENCE OF WHEEL, 12.2 FEET

0	1	2	3	4	5	6	7	8	9	10
0	4	9	13	17	22	26	30	35	39	43
10	48	52	56	61	65	69	74	78	82	87
20	91	95	100	104	108	113	117	121	126	130
30	134	138	143	147	151	156	160	165	169	173
40	178	182	186	191	195	199	204	208	212	216
50	221	225	230	234	238	243	247	251	256	260
60	264	268	273	277	281	286	290	294	299	303
70	307	312	316	320	325	329	333	338	342	346
80	351	355	359	364	368	372	377	381	385	390
90	395	399	404	408	412	417	421	425	429	433

After measuring wheel use nearest tenth for size of wheel.

TABLE 20.—Five-place logarithms of natural numbers.

[Fractional change in a number corresponding to a change in its logarithm.]

Computed from the formula,

$$\frac{\Delta N}{N} = \frac{\Delta \log N}{\mu},$$

$\mu$ =modulus of common logarithms = 0.43429448.

For $\Delta \log N$ = 1 unit in	$\frac{\Delta N}{N}$	For $\Delta \log N$ = 4 units in	$\frac{\Delta N}{N}$ (in round numbers)
Fourth place.....	4343	Fourth place.....	1000
Fifth place .....	43439	Fifth place .....	10000
Sixth place .....	434394	Sixth place .....	100000
Seventh place.....	4343945	Seventh place.....	1000000



TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L. 0	1	2	3	4	5	6	7	8	9																
0		00 000	30 108	47 712	60 206	69 897	77 815	84 510	90 809	95 434																
1	00 000	04 189	07 918	11 394	14 613	17 609	20 412	23 045	25 527	27 875																
2	30 108	32 222	34 242	36 178	38 021	41 497	43 136	44 716	46 240																	
3	47 712	49 186	50 515	51 851	53 148	54 407	55 630	56 820	57 978	59 106																
4	60 206	61 278	62 335	63 347	64 345	65 321	66 275	67 210	68 124	69 020																
5	69 897	70 787	71 660	72 428	73 289	74 086	74 819	75 587	76 343	77 085																
6	77 815	78 533	79 239	79 934	80 615	81 291	81 954	82 607	83 251	83 885																
7	84 510	85 136	85 733	86 322	86 923	87 506	88 081	88 649	89 209	89 763																
8	90 809	91 349	91 881	92 406	92 928	93 440	93 950	94 448	94 939																	
9	95 434	95 904	96 379	96 848	97 313	97 772	98 227	98 677	99 123	99 564																
10	00 000	00 432	00 860	01 284	01 703	02 119	02 531	02 938	03 342	03 743																
11	04 139	04 532	04 922	05 308	05 690	06 070	06 446	06 819	07 188	07 555																
12	07 918	08 279	08 636	08 991	09 342	09 691	10 037	10 380	10 721	11 059																
13	11 394	11 727	12 067	12 405	12 740	13 083	13 424	13 762	14 100	14 431																
14	14 613	14 922	15 239	15 554	15 866	16 187	16 496	16 792	17 026	17 319																
15	17 609	17 896	18 184	18 469	18 752	19 033	19 312	19 590	19 866	20 140																
16	20 412	20 683	20 952	21 219	21 484	21 748	22 011	22 272	22 531	22 789																
17	23 045	23 300	23 553	23 805	24 055	24 304	24 551	24 797	25 042	25 285																
18	25 527	25 768	26 007	26 245	26 482	26 717	26 951	27 184	27 416	27 646																
19	27 875	28 108	28 339	28 566	28 790	29 008	29 224	29 447	29 667	29 885																
20	30 108	30 320	30 535	30 750	30 963	31 175	31 387	31 597	31 806	32 013																
21	32 222	32 436	32 651	32 868	33 081	33 244	33 445	33 646	33 846	34 044																
22	34 242	34 439	34 636	34 830	35 025	35 218	35 411	35 603	35 798	35 984																
23	36 178	36 361	36 549	36 736	36 922	37 107	37 291	37 475	37 658	37 840																
24	38 021	38 202	38 382	38 561	38 738	38 917	39 094	39 270	39 445	39 620																
25	39 794	39 967	40 140	40 312	40 483	40 654	40 824	41 000	41 175	41 350																
26	41 497	41 654	41 810	41 966	42 120	42 275	42 429	42 581	42 735	42 885																
27	43 136	43 297	43 457	43 616	43 775	43 933	44 091	44 248	44 404	44 560																
28	44 716	44 871	45 025	45 179	45 332	45 484	45 637	45 788	45 939	46 090																
29	46 240	46 389	46 537	46 687	46 835	46 982	47 129	47 276	47 422	47 567																
30	47 712	47 857	48 001	48 144	48 287	48 430	48 572	48 714	48 855	48 996																
31	49 136	49 276	49 415	49 554	49 693	49 831	49 969	50 106	50 243	50 379																
32	50 515	50 651	50 786	50 920	51 055	51 188	51 322	51 455	51 587	51 720																
33	51 851	51 983	52 114	52 244	52 375	52 504	52 634	52 763	52 892	53 020																
34	53 148	53 275	53 401	53 529	53 656	53 782	53 908	54 033	54 158	54 283																
35	54 407	54 531	54 654	54 777	54 900	55 023	55 145	55 267	55 389	55 509																
36	55 630	55 751	55 871	55 991	56 110	56 229	56 348	56 467	56 585	56 703																
37	56 820	56 937	57 054	57 171	57 287	57 403	57 519	57 634	57 749	57 864																
38	57 978	58 092	58 206	58 320	58 433	58 546	58 659	58 771	58 883	58 995																
39	59 106	59 218	59 329	59 439	59 550	59 660	59 770	59 879	59 988	60 097																
40	60 206	60 314	60 423	60 531	60 638	60 745	60 853	60 959	61 066	61 172																
41	61 278	61 384	61 490	61 595	61 700	61 805	61 909	62 014	62 118	62 221																
42	62 325	62 428	62 531	62 634	62 737	62 839	62 941	63 043	63 144	63 246																
43	63 347	63 448	63 548	63 649	63 749	63 849	63 949	64 048	64 147	64 246																
44	64 345	64 444	64 542	64 640	64 738	64 836	64 933	65 031	65 128	65 225																
45	65 321	65 418	65 514	65 610	65 706	65 801	65 896	65 992	66 087	66 181																
46	66 276	66 370	66 464	66 558	66 652	66 745	66 839	66 932	67 025	67 117																
47	67 210	67 302	67 394	67 486	67 578	67 669	67 761	67 852	67 943	68 034																
48	68 124	68 215	68 305	68 395	68 485	68 574	68 664	68 753	68 842	68 931																
49	69 020	69 108	69 197	69 285	69 373	69 461	69 548	69 636	69 723	69 810																
50	69 897	69 984	70 070	70 157	70 243	70 329	70 415	70 501	70 586	70 672																
N.	L. 0	1	2	3	4	5	6	7	8	9																
0° 1' = 00"	8. 4. 68 557	T. 4. 68 557	0° 5' = 300"	8. 4. 68 557	T. 4. 68 558	0 2 = 120	4. 68 557	4. 68 558	0 3 = 180	4. 68 557	4. 68 557	0 4 = 240	4. 68 557	4. 68 558	0 5 = 300	4. 68 557	4. 68 558	0 6 = 360	4. 68 557	4. 68 558	0 7 = 420	4. 68 557	4. 68 558	0 8 = 480	4. 68 557	4. 68 558

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L. 0	1	2	3	4	5	6	7	8	9	
60	69 897	69 984	70 070	70 157	70 243	70 329	70 415	70 501	70 586	70 672	
61	70 757	70 842	70 927	71 012	71 096	71 181	71 265	71 349	71 433	71 517	
62	71 600	71 684	71 767	71 850	71 933	72 016	72 099	72 181	72 263	72 346	
63	72 428	72 509	72 591	72 673	72 754	72 835	72 916	72 997	73 078	73 159	
64	73 239	73 320	73 400	73 480	73 560	73 640	73 719	73 799	73 878	73 957	
65	74 036	74 115	74 194	74 273	74 351	74 429	74 507	74 586	74 663	74 741	
66	74 819	74 896	74 974	75 051	75 128	75 205	75 282	75 358	75 435	75 511	
67	75 587	75 664	75 740	75 815	75 891	75 967	76 042	76 118	76 193	76 268	
68	76 343	76 418	76 492	76 567	76 641	76 716	76 790	76 864	76 938	77 012	
69	77 085	77 159	77 232	77 305	77 379	77 452	77 525	77 597	77 670	77 743	
70	77 815	77 887	77 960	78 032	78 104	78 176	78 247	78 319	78 390	78 462	
71	78 533	78 604	78 675	78 746	78 817	78 888	78 958	79 029	79 099	79 169	
72	79 239	79 309	79 379	79 449	79 518	79 588	79 657	79 727	79 796	79 865	
73	79 934	80 003	80 072	80 140	80 209	80 277	80 345	80 414	80 482	80 550	
74	80 618	80 686	80 754	80 821	80 889	80 956	81 023	81 090	81 158	81 224	
75	81 291	81 358	81 425	81 491	81 558	81 624	81 690	81 757	81 823	81 889	
76	81 954	82 020	82 086	82 151	82 217	82 282	82 347	82 413	82 478	82 543	
77	82 607	82 672	82 737	82 802	82 866	82 930	82 995	83 059	83 123	83 187	
78	83 251	83 315	83 378	83 442	83 506	83 569	83 632	83 695	83 759	83 822	
79	83 885	83 948	84 011	84 073	84 136	84 198	84 261	84 323	84 385	84 448	
80	84 510	84 572	84 634	84 696	84 757	84 819	84 880	84 942	85 003	85 065	
81	85 126	85 187	85 248	85 309	85 370	85 431	85 491	85 552	85 612	85 673	
82	85 733	85 794	85 854	85 914	85 974	86 034	86 094	86 153	86 213	86 273	
83	86 332	86 392	86 451	86 510	86 570	86 629	86 688	86 747	86 806	86 864	
84	86 923	86 982	87 040	87 099	87 157	87 215	87 274	87 332	87 390	87 448	
85	87 506	87 564	87 622	87 679	87 737	87 795	87 852	87 910	87 967	88 024	
86	88 081	88 138	88 195	88 252	88 309	88 365	88 423	88 480	88 536	88 593	
87	88 649	88 705	88 762	88 818	88 874	88 930	88 986	89 042	89 098	89 154	
88	89 209	89 265	89 321	89 376	89 432	89 487	89 542	89 597	89 653	89 708	
89	89 763	89 818	89 873	89 927	89 982	90 037	90 091	90 145	90 200	90 255	
90	90 309	90 363	90 417	90 472	90 526	90 580	90 634	90 687	90 741	90 795	
91	90 849	90 902	90 956	91 009	91 062	91 115	91 169	91 222	91 275	91 328	
92	91 381	91 434	91 487	91 540	91 593	91 645	91 698	91 751	91 803	91 855	
93	91 908	91 960	92 012	92 065	92 117	92 169	92 221	92 273	92 324	92 376	
94	92 428	92 480	92 531	92 583	92 634	92 686	92 737	92 788	92 840	92 891	
95	92 942	92 993	93 044	93 095	93 146	93 197	93 247	93 298	93 349	93 399	
96	93 450	93 500	93 551	93 601	93 651	93 702	93 752	93 802	93 852	93 902	
97	93 952	94 002	94 052	94 101	94 151	94 201	94 250	94 300	94 349	94 399	
98	94 448	94 498	94 547	94 596	94 645	94 694	94 743	94 792	94 841	94 890	
99	94 939	94 988	95 036	95 085	95 134	95 182	95 231	95 279	95 328	95 376	
100	95 424	95 472	95 521	95 569	95 617	95 665	95 713	95 761	95 809	95 856	
91	95 904	95 952	95 999	96 047	96 095	96 142	96 189	96 237	96 284	96 332	
92	96 379	96 426	96 473	96 520	96 567	96 614	96 661	96 708	96 755	96 802	
93	96 848	96 895	96 942	96 988	97 035	97 081	97 128	97 174	97 220	97 267	
94	97 313	97 359	97 405	97 451	97 497	97 543	97 589	97 635	97 681	97 727	
95	97 772	97 818	97 864	97 909	97 955	98 000	98 046	98 091	98 137	98 182	
96	98 227	98 272	98 318	98 363	98 408	98 453	98 498	98 543	98 588	98 633	
97	98 677	98 722	98 767	98 811	98 856	98 900	98 945	98 989	99 034	99 078	
98	99 123	99 167	99 211	99 255	99 300	99 344	99 388	99 432	99 476	99 520	
99	99 564	99 607	99 651	99 695	99 739	99 782	99 826	99 870	99 913	99 957	
100	00 000	00 043	00 087	00 130	00 173	00 217	00 260	00 303	00 346	00 389	
N.	L. 0	1	2	3	4	5	6	7	8	9	
0° 9' = 540"	S. 4. 68 557	T. 4. 68 558	0° 13' = 780"	S. 4. 68 557	T. 4. 68 558	0 10 = 600	4. 68 557	4. 68 558	0 14 = 840	4. 68 557	4. 68 558
0 11 = 660	4. 68 557	4. 68 558	0 15 = 900	4. 68 557	4. 68 558	0 12 = 720	4. 68 557	4. 68 558	0 16 = 960	4. 68 557	4. 68 558

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
100	00	000	043	087	130	173	217	260	303	346	389						
101		432	475	518	561	604	647	689	732	775	817	44 43 42					
102		860	903	945	988	030	072	115	157	199	242	1 4,4 4,3 4,2					
103	01	284	326	368	410	452	494	536	578	620	662	2 8,5 8,6 8,4					
104		704	745	787	828	870	912	953	995	036	078	13,2 12,9 12,6					
105	02	119	160	202	243	284	325	366	407	449	490	17,3 17,2 16,8					
106		531	572	612	653	694	735	776	816	857	898	5 22,0 21,5 21,0					
107		938	979	019	060	100	141	181	222	262	302	6 26,4 25,8 25,2					
108	03	342	383	423	463	503	543	583	623	663	703	7 30,3 30,1 29,4					
109		743	782	822	862	902	941	981	021	060	100	8 35,2 34,4 33,8					
110	04	139	179	218	258	297	336	376	415	454	493	9 39,6 38,7 37,8					
111		532	571	610	650	689	727	766	805	844	883	41 40 39					
112		922	961	999	038	077	116	154	192	231	269	1 4,1 4,0 3,9					
113	05	308	346	385	423	461	500	538	576	614	652	2 8,2 8,0 7,8					
114		690	729	767	805	843	881	918	956	994	032	3 12,3 12,0 11,7					
115	06	070	106	145	183	221	258	296	333	371	408	4 16,4 16,0 15,6					
116		446	483	521	558	595	633	670	707	744	781	5 20,5 20,0 19,5					
117		819	856	893	930	967	004	041	078	115	151	6 24,6 24,0 23,4					
118	07	186	223	262	298	335	372	408	445	482	518	7 28,7 28,0 27,3					
119		555	591	628	664	700	737	773	809	846	882	8 32,8 32,0 31,2					
120		918	954	990	027	063	099	135	171	207	243	9 36,9 36,0 35,1					
121	08	279	314	350	386	422	458	493	529	565	600	25 27 26					
122		638	672	707	743	778	814	849	884	920	955	1 3,8 3,7 3,6					
123		991	026	061	096	132	167	202	237	272	307	2 7,6 7,4 7,2					
124	09	342	377	412	447	482	517	552	587	621	656	3 11,4 11,1 10,8					
125		691	726	760	795	830	864	899	934	968	003	4 15,3 14,8 14,4					
126	10	037	072	106	140	175	209	243	278	312	346	5 19,0 18,5 18,0					
127		380	415	449	483	517	551	585	619	653	687	6 22,8 22,2 21,6					
128		721	755	789	823	857	890	924	958	992	025	7 26,6 25,9 25,2					
129	11	059	093	126	160	193	227	261	294	327	361	8 30,4 29,6 28,8					
130		394	428	461	494	528	561	594	628	661	694	9 34,2 33,3 32,4					
131		727	760	793	826	860	893	926	959	992	024	25 24 23					
132	12	057	090	123	156	189	222	254	287	320	352	1 3,5 3,4 3,3					
133		346	418	450	483	516	548	581	613	646	678	2 7,0 6,8 6,6					
134		710	743	775	808	840	872	905	937	969	001	3 10,5 10,2 9,9					
135	13	083	066	098	130	162	194	226	258	290	322	4 14,0 13,6 13,2					
136		354	386	418	450	481	513	545	577	609	640	5 17,6 17,0 16,5					
137		672	704	735	767	799	830	862	893	925	956	6 21,0 20,4 19,8					
138		958	019	051	082	114	145	176	208	239	270	7 24,5 23,8 23,1					
139	14	201	333	364	395	426	457	489	520	551	582	8 28,0 27,2 26,4					
140		613	644	675	706	737	768	799	829	860	891	9 31,5 30,6 29,7					
141		922	953	983	014	045	076	108	137	168	198	25 22 21 20					
142	15	229	259	290	320	351	381	412	442	473	503	1 3,2 3,1 3,0					
143		534	564	594	625	655	685	715	746	776	806	2 6,4 6,2 6,0					
144		836	866	897	927	957	987	017	047	077	107	3 9,6 9,3 9,0					
145	16	137	167	197	227	256	286	316	346	376	406	4 12,3 12,4 12,0					
146		436	465	495	524	554	584	613	643	673	702	5 16,0 15,5 15,0					
147		732	761	791	820	850	879	909	938	967	997	6 19,2 18,6 18,0					
148	17	026	056	085	114	143	173	202	231	260	289	7 22,4 21,7 21,0					
149		319	348	377	406	435	464	493	522	551	580	8 25,6 24,8 24,0					
150		609	638	667	696	725	754	782	811	840	869	9 28,8 27,9 27,0					
N	L	0	1	2	3	4	5	6	7	8	9	P. P.					
0° 16' = 960"	S.	4.	68	557	T.	4.	68	558	0° 21' = 1260"	S.	4.	68	557	T.	4.	68	558
0 17 = 1020		4.	68	557		4.	68	558	0 22 = 1320		4.	68	557		4.	68	558
0 18 = 1080		4.	68	557		4.	68	558	0 23 = 1380		4.	68	557		4.	68	558
0 19 = 1140		4.	68	557		4.	68	558	0 24 = 1440		4.	68	557		4.	68	558
0 20 = 1200		4.	68	557		4.	68	558	0 25 = 1500		4.	68	557		4.	68	558

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
150	17	809	838	867	896	925	754	782	811	840	869						
151		896	926	955	984	.013	.041	.070	.099	.127	.156						
152	18	184	213	241	270	298	327	356	384	412	441						
153		469	498	526	554	583	611	639	667	696	724						
154		752	780	808	837	865	893	921	949	977	.006						
155	19	033	061	089	117	145	173	201	229	257	285	29	30				
156		312	340	368	396	424	451	479	507	535	562						
157		590	618	645	673	700	728	756	783	811	838						
158		866	893	921	948	976	.003	.030	.058	.086	.112						
159	20	140	167	194	222	249	276	303	330	358	385						
160		412	439	466	493	520	548	575	602	629	656						
161		683	710	737	763	790	817	844	871	898	925						
162		952	978	.006	.032	.059	.085	.112	.139	.165	.192						
163	21	219	245	272	299	326	352	379	406	431	458						
164		484	511	537	564	590	617	643	669	696	722						
165		748	775	801	827	854	880	906	932	958	985	27	28				
166	22	011	037	063	089	115	141	167	194	220	246						
167		272	298	324	350	376	401	427	453	479	505						
168		531	557	583	608	634	660	686	712	737	763						
169		789	814	840	866	891	917	943	968	994	.019						
170	23	045	070	096	121	147	172	196	223	248	274						
171		300	325	350	376	401	426	452	477	502	528						
172		553	578	603	629	654	679	704	729	754	779						
173		805	830	855	880	905	930	955	980	.006	.030						
174	24	055	080	105	130	155	180	204	229	254	279						
175		304	329	353	378	403	428	452	477	502	527	25	26				
176		551	576	601	625	650	674	699	724	748	773						
177		797	822	846	871	895	920	944	969	993	.018						
178	25	042	066	091	115	139	164	188	212	237	261						
179		285	310	334	358	382	406	431	455	479	503						
180		527	551	575	600	624	648	672	696	720	744						
181		768	792	816	840	864	888	912	935	959	983						
182	26	007	031	055	079	102	126	150	174	198	221						
183		245	269	293	316	340	364	387	411	435	458						
184		482	505	529	553	576	600	623	647	670	694						
185		717	741	764	788	811	834	858	881	905	928	24	25				
186		951	975	998	.021	.045	.066	.091	.114	.138	.161						
187	27	184	207	231	254	277	300	323	346	370	393						
188		416	439	462	485	508	531	554	577	600	623						
189		646	669	692	715	738	761	784	807	830	852						
190		875	898	921	944	967	989	.012	.035	.058	.081						
191	28	103	126	149	171	194	217	240	262	285	307						
192		330	353	375	398	421	443	466	488	511	533						
193		556	578	601	623	646	668	691	713	735	758						
194		780	803	825	847	870	892	914	937	959	981						
195	29	003	026	048	070	092	115	137	159	181	203	22	23				
196		226	248	270	292	314	336	358	380	403	425						
197		447	469	491	513	535	557	579	601	623	645						
198		667	688	710	732	754	776	798	820	842	863						
199		885	907	929	951	973	994	.016	.038	.060	.081						
200	30	103	125	146	168	190	211	233	255	276	298	P. P.					
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
0° 25' = 1500"	S.	4.	68	557	T.	4.	68	558	0° 30' = 1800"	S.	4.	68	557	T.	4.	68	559
0 26 = 1560		4.	68	557		4.	68	558	0 31 = 1860		4.	68	557		4.	68	559
0 27 = 1620		4.	68	557		4.	68	558	0 32 = 1920		4.	68	557		4.	68	560
0 28 = 1680		4.	68	557		4.	68	558	0 33 = 1980		4.	68	557		4.	68	560
0 29 = 1740		4.	68	557		4.	68	558	0 34 = 2040		4.	68	557		4.	68	560

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
200	NO	100	125	146	168	190	211	233	255	276	298						
201		320	341	363	384	406	428	449	471	492	514	22					
202		536	557	578	600	621	643	664	685	707	728	21					
203		750	771	792	814	835	856	878	899	920	942	1					
204		963	984	006	027	048	069	091	112	133	154	2					
205	31	175	197	218	239	260	281	302	323	345	366	3					
206		387	408	429	450	471	492	513	534	555	576	4					
207		597	618	639	660	681	702	723	744	765	786	5					
208		806	827	848	869	890	911	931	952	973	994	6					
209	32	015	036	056	077	098	118	139	160	181	201	7					
210		222	243	263	284	305	325	346	366	387	408	8					
211		428	449	469	490	510	531	552	572	593	613	9					
212		634	654	675	695	716	736	756	777	797	818	1					
213		838	858	879	899	919	940	960	980	001	021	2					
214	33	041	062	082	102	122	143	163	183	203	224	3					
215		244	264	284	304	325	345	365	385	405	425	4					
216		445	465	485	506	526	546	566	586	606	626	5					
217		646	666	686	706	726	746	766	786	806	826	6					
218		846	866	886	906	926	946	966	986	006	026	7					
219	34	044	064	084	104	124	143	163	183	203	223	8					
220		243	262	282	301	321	341	361	380	400	420	9					
221		429	459	479	498	518	537	557	577	596	616	1					
222		635	655	674	694	713	733	753	772	792	811	2					
223		830	850	869	889	908	928	947	967	986	006	3					
224	35	025	044	064	083	103	122	141	160	180	199	4					
225		218	238	257	276	295	315	334	353	372	392	5					
226		411	430	449	468	488	507	526	545	564	583	6					
227		608	627	646	665	684	703	722	741	760	779	7					
228		798	817	836	855	874	893	912	931	950	969	8					
229		984	003	021	040	059	078	097	116	135	154	9					
230	36	173	192	211	229	248	267	286	305	324	342						
231		361	380	399	418	436	455	474	493	511	530	1					
232		549	568	586	605	624	642	661	680	698	717	2					
233		735	754	773	791	810	829	847	866	884	903	3					
234		922	940	959	977	996	014	033	051	070	088	4					
235	37	107	125	144	162	181	199	218	236	254	273	5					
236		291	310	328	346	365	383	401	420	438	457	6					
237		475	493	511	530	548	566	585	603	621	639	7					
238		658	676	694	712	731	749	767	785	803	822	8					
239		840	858	876	894	912	931	949	967	985	003	9					
240	38	021	039	057	075	093	112	130	148	166	184						
241		202	220	238	256	274	292	310	328	346	364	1					
242		382	399	417	435	453	471	489	507	525	543	2					
243		561	578	596	614	632	650	668	686	703	721	3					
244		739	757	775	792	810	828	846	863	881	899	4					
245		917	934	952	970	987	005	023	041	058	076	5					
246	39	094	111	129	146	164	182	199	217	235	252	6					
247		270	287	305	322	340	358	375	393	410	428	7					
248		445	463	480	498	515	533	550	568	585	602	8					
249		620	637	655	672	690	707	724	742	759	777	9					
250		794	811	829	846	863	881	898	915	933	950						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
0° 33' = 1980"	S.	4.	68	557	T.	4.	68	559	0° 38' = 2280"	S.	4.	68	557	T.	4.	68	559
0 34 = 2040		4.	68	557		4.	68	559	0 39 = 2340		4.	68	557		4.	68	559
0 35 = 2100		4.	68	557		4.	68	559	0 40 = 2400		4.	68	557		4.	68	559
0 36 = 2160		4.	68	557		4.	68	559	0 41 = 2460		4.	68	556		4.	68	560
0 37 = 2220		4.	68	557		4.	68	559	0 42 = 2520		4.	68	556		4.	68	560

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N	L. 0	1	2	3	4	5	6	7	8	9	P. P.						
240	39	794	811	829	846	863	881	898	915	933	950	16					
251		967	985	002	019	037	054	071	088	106	123						
262	40	140	157	175	192	209	226	243	261	278	295						
263		312	329	346	364	381	398	415	432	449	466						
254		483	500	518	535	552	569	586	603	620	637	17					
255		654	671	688	705	722	739	756	773	790	807						
256		824	841	858	875	892	909	926	943	960	976						
257		998	010	027	044	061	078	095	111	128	145						
258	41	162	179	196	212	229	246	263	280	296	313	18					
259		330	347	363	380	397	414	430	447	464	481						
260		497	514	531	547	564	581	597	614	631	647						
261		664	681	697	714	731	747	764	780	797	814						
262		830	847	863	880	896	913	929	946	963	979	19					
263		996	012	029	045	062	078	095	111	127	144						
264	42	160	177	193	210	226	243	259	275	292	308						
265		325	341	357	374	390	406	423	439	455	472						
266		488	504	521	537	553	570	586	602	619	635	20					
267		651	667	684	700	716	732	749	765	781	797						
268		813	830	846	862	878	894	911	927	943	959						
269		975	991	008	024	040	056	072	088	104	120						
270	43	186	192	189	185	201	217	233	249	265	281	21					
271		297	313	329	345	361	377	393	409	425	441						
272		457	473	489	505	521	537	553	569	584	600						
273		616	632	648	664	680	696	712	727	743	759						
274		775	791	807	823	838	854	870	886	902	917	22					
275		933	949	965	981	996	012	028	044	059	075						
276	44	091	107	122	138	154	170	186	201	217	232						
277		248	264	279	295	311	326	342	358	373	389						
278		404	420	436	451	467	483	498	514	529	545	23					
279		560	576	592	607	623	638	654	669	685	700						
280		716	731	747	762	778	793	809	824	840	855						
281		871	886	902	917	932	948	963	979	994	010						
282	45	025	040	056	071	086	102	117	133	148	163	24					
283		179	194	209	225	240	256	271	286	301	317						
284		332	347	362	378	393	408	423	439	454	469						
285		484	500	515	530	545	561	576	591	606	621						
286		637	652	667	682	697	712	728	743	758	773	25					
287		788	803	818	834	849	864	879	894	909	924						
288		939	954	969	984	000	015	030	045	060	075						
289	46	090	105	120	135	150	165	180	195	210	225						
290		240	255	270	285	300	315	330	345	359	374	26					
291		389	404	419	434	449	464	479	494	509	523						
292		538	553	568	583	598	613	627	642	657	672						
293		687	702	716	731	746	761	776	790	805	820						
294		835	850	864	879	894	909	923	938	953	967	27					
295		982	997	012	026	041	056	070	085	100	114						
296	47	129	144	159	173	188	202	217	232	246	261						
297		276	290	305	319	334	349	363	378	392	407						
298		422	436	451	465	480	494	509	524	538	553	28					
299		567	582	596	611	625	640	654	669	683	698						
300		712	727	741	756	770	784	799	813	828	842						
N.	L. 0	1	2	3	4	5	6	7	8	9	P. P.						
0° 41' = 2460"	S.	4.	68	556	T.	4.	68	560	0° 46' = 2760"	S.	4.	68	556	T.	4.	68	560
0 42 = 2520		4.	68	556		4.	68	560	0 47 = 2820		4.	68	556		4.	68	560
0 43 = 2580		4.	68	556		4.	68	560	0 48 = 2880		4.	68	556		4.	68	560
0 44 = 2640		4.	68	556		4.	68	560	0 49 = 2940		4.	68	556		4.	68	560
0 45 = 2700		4.	68	556		4.	68	560	0 50 = 3000		4.	68	556		4.	68	561

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.			
300	47	712	727	741	756	770	784	799	813	828	842				
301		857	871	885	900	914	929	943	958	972	986				
302	48	001	015	029	044	058	073	087	101	116	130				
303		144	159	173	187	202	216	230	244	259	273				
304		287	302	316	330	344	359	373	387	401	416	13			
305		430	444	458	473	487	501	515	530	544	558	1			
306		572	586	601	615	629	643	657	671	686	700	2			
307		714	728	742	756	770	785	799	813	827	841	3			
308		855	869	883	897	911	926	940	954	968	982	4			
309		996	010	024	038	052	066	080	094	108	122	5			
310	49	136	150	164	178	192	206	220	234	248	262	6			
311		276	290	304	318	332	346	360	374	388	402	7			
312		416	429	443	457	471	485	499	513	527	541	8			
313		564	568	582	596	610	624	638	651	665	679	9			
314		693	707	721	734	748	762	776	790	803	817				
315		831	845	859	872	886	900	914	927	941	955	14			
316		969	982	996	010	024	037	051	065	079	092	1			
317	50	106	120	133	147	161	174	188	202	215	229	2			
318		243	256	270	284	297	311	325	338	352	365	3			
319		379	393	406	420	433	447	461	474	488	501	4			
320		515	529	542	556	569	583	596	610	623	637	5			
321		651	664	678	691	705	718	732	745	759	772	6			
322		786	799	813	826	840	853	866	880	893	907	7			
323		920	934	947	961	974	987	001	014	028	041	8			
324	51	065	068	081	095	108	121	135	148	162	175	9			
325		188	202	215	228	242	255	268	282	295	309				
326		322	335	348	362	375	388	402	415	428	441				
327		455	468	481	495	508	521	534	548	561	574	13			
328		587	601	614	627	640	654	667	680	693	706	1			
329		720	733	746	759	772	786	799	812	825	838	2			
330		851	865	878	891	904	917	930	943	957	970	3			
331		983	996	000	022	035	048	061	075	088	101	4			
332	52	114	127	140	153	166	179	192	205	218	231	5			
333		244	257	270	284	297	310	323	336	349	362	6			
334		375	388	401	414	427	440	453	466	479	492	7			
335		504	517	530	543	556	569	582	595	608	621	8			
336		634	647	660	673	686	699	711	724	737	750	9			
337		763	776	789	802	815	827	840	853	866	879				
338		892	905	917	930	943	956	969	982	994	007				
339	53	020	033	046	058	071	084	097	110	122	135	12			
340		148	161	173	186	199	212	224	237	250	263	1			
341		275	288	301	314	326	339	352	364	377	390	2			
342		403	415	428	441	453	466	479	491	504	517	3			
343		529	542	555	567	580	593	605	618	631	643	4			
344		656	668	681	694	706	719	732	744	757	769	5			
345		782	794	807	820	832	845	857	870	882	895	6			
346		908	920	933	945	958	970	983	995	008	020	7			
347	54	033	045	058	070	083	095	108	120	133	145	8			
348		158	170	183	195	208	220	233	245	258	270	9			
349		283	295	307	320	332	345	357	370	382	394				
350		407	419	432	444	456	469	481	494	506	518				
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.			
0° 50'	3000"	S. 4	68	556	T 4	68	561	0° 51'	3300"	S. 4	68	556	T 4	68	561
0 51	3060		4	68	556		4	68	561	0 52	3360		4	68	556
0 52	3120		4	68	556		4	68	561	0 53	3420		4	68	556
0 53	3180		4	68	556		4	68	561	0 54	3480		4	68	556
0 54	3240		4	68	556		4	68	561	0 55	3540		4	68	556

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.			
340	54	407	419	432	444	456	469	481	494	506	518				
351		581	543	556	568	580	593	605	617	630	642				
352		654	667	679	691	704	716	728	741	753	765				
353		777	790	802	814	827	839	851	864	876	888				
354		900	913	925	937	949	962	974	986	998	011	13			
355	55	023	035	047	060	072	084	096	108	121	133	1 1.8			
356		145	157	169	182	194	206	218	230	242	255	2 2.6			
357		267	279	291	303	315	328	340	352	364	376	3 3.9			
358		388	400	413	425	437	449	461	473	485	497	4 5.2			
359		509	522	534	546	558	570	582	594	606	618	5 6.5			
360		630	642	654	666	678	691	703	715	727	739	6 7.8			
361		751	763	775	787	799	811	823	835	847	859	7 9.1			
362		871	883	895	907	919	931	943	955	967	979	8 10.4			
363		991	003	015	027	038	050	062	074	086	098	9 11.7			
364	56	110	122	134	146	158	170	182	194	206	217				
365		229	241	253	265	277	289	301	312	324	336	12			
366		348	360	372	384	396	407	419	431	443	455	1 1.2			
367		467	478	490	502	514	526	538	549	561	573	2 2.4			
368		585	597	608	620	632	644	656	667	679	691	3 3.6			
369		703	714	726	738	750	761	773	785	797	808	4 4.8			
370		820	832	844	855	867	879	891	902	914	926	5 6.0			
371		937	949	961	972	984	996	008	019	031	043	6 7.2			
372	57	054	066	078	089	101	113	124	136	148	159	7 8.4			
373		171	183	194	206	217	229	241	252	264	276	8 9.6			
374		287	299	310	322	334	345	357	368	380	392	9 10.8			
375		403	415	426	438	449	461	473	484	496	507				
376		519	530	542	553	565	576	588	600	611	623				
377		634	646	657	669	680	692	703	715	726	738	11			
378		749	761	772	784	795	807	818	830	841	852	1 1.1			
379		864	875	887	898	910	921	933	944	956	967	2 2.2			
380		978	990	001	013	024	035	047	058	070	081	3 3.3			
381	58	092	104	115	127	138	149	161	172	184	195	4 4.4			
382		206	218	229	240	252	263	274	286	297	309	5 5.5			
383		320	331	343	354	365	377	388	399	410	422	6 6.6			
384		433	444	456	467	478	490	501	512	524	535	7 7.7			
385		546	557	569	580	591	602	614	625	636	647	8 8.8			
386		659	670	681	692	704	715	726	737	749	760	9 9.9			
387		771	782	794	805	816	827	838	850	861	872				
388		883	894	906	917	928	939	950	961	973	984	10			
389		995	006	017	028	040	051	062	073	084	095	1 1.0			
390	59	106	118	129	140	151	162	173	184	195	207	2 2.0			
391		218	229	240	251	262	273	284	295	306	318	3 3.0			
392		329	340	351	362	373	384	395	406	417	428	4 4.0			
393		439	450	461	472	483	494	506	517	528	539	5 5.0			
394		550	561	572	583	594	605	616	627	638	649	6 6.0			
395		660	671	682	693	704	715	726	737	748	759	7 7.0			
396		770	780	791	802	813	824	835	846	857	868	8 8.0			
397		879	890	901	912	923	934	945	956	966	977	9 9.0			
398		988	999	010	021	032	043	054	065	076	086				
399	60	097	108	119	130	141	152	163	174	184	195				
400		206	217	228	239	249	260	271	282	293	304				
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.			
0° 58' = 3480"	S.	4. 68	555				T. 4. 68	562	1° 3' = 3780"			S. 4. 68	555	T. 4. 68	562
0 59 = 3540		4. 68	555				4. 68	562	1 4 = 3840			4. 68	555	4. 68	563
1 0 = 3600		4. 68	555				4. 68	562	1 5 = 3900			4. 68	555	4. 68	563
1 1 = 3660		4. 68	555				4. 68	562	1 6 = 3960			4. 68	555	4. 68	563
1 2 = 3720		4. 68	555				4. 68	562	1 7 = 4020			4. 68	555	4. 68	563



TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
400	60	206	217	226	236	249	260	271	282	293	304						
401		314	325	336	347	356	369	379	390	401	412						
402		428	438	444	455	466	477	487	498	509	520						
403		531	541	552	563	574	584	595	606	617	627						
404		638	649	660	670	681	692	703	713	724	735						
405		746	756	767	778	788	799	810	821	831	842						
406		853	863	874	885	895	906	917	927	938	949						
407		959	970	981	991	002	013	023	034	045	055						
408	61	064	077	087	098	109	119	130	140	151	162						
409		172	183	194	204	215	225	236	247	257	268						
410		278	289	300	310	321	331	342	352	363	374						
411		384	395	405	416	426	437	448	458	469	479						
412		490	500	511	521	532	542	553	563	574	584						
413		595	606	616	627	637	648	658	669	679	690						
414		700	711	721	731	742	752	763	773	784	794						
415		805	815	826	836	847	857	868	878	888	899						
416		909	920	930	941	951	962	972	982	993	003						
417	62	014	024	034	045	055	066	076	086	097	107						
418		118	129	138	149	159	170	180	190	201	211						
419		221	232	242	252	263	273	284	294	304	315						
420		325	335	346	356	366	377	387	397	408	418						
421		428	439	449	459	469	480	490	500	511	521						
422		531	542	552	562	572	583	593	603	613	624						
423		634	644	655	665	675	686	696	706	716	726						
424		737	747	757	767	778	788	798	808	818	829						
425		839	849	859	870	880	890	900	910	921	931						
426		941	951	961	972	982	992	002	012	022	032						
427	63	043	053	063	073	083	094	104	114	124	134						
428		144	155	165	175	185	195	205	215	225	236						
429		246	256	266	276	286	296	306	317	327	337						
430		347	357	367	377	387	397	407	417	428	438						
431		448	458	468	478	488	498	508	518	528	538						
432		548	558	568	579	589	599	609	619	629	639						
433		649	659	669	679	689	699	709	719	729	739						
434		749	759	769	779	789	799	809	819	829	839						
435		849	859	869	879	889	899	909	919	929	939						
436		949	959	969	979	989	999	008	018	028	038						
437	64	048	058	068	078	088	098	108	118	128	137						
438		147	157	167	177	187	197	207	217	227	237						
439		246	256	266	276	286	296	306	316	326	336						
440		345	355	365	375	385	395	404	414	424	434						
441		444	454	464	475	485	495	505	515	525	535						
442		542	552	562	572	582	591	601	611	621	631						
443		640	650	660	670	680	689	699	709	719	729						
444		738	748	758	768	777	787	797	807	816	826						
445		836	846	856	865	875	885	895	904	914	924						
446		933	943	953	963	972	982	992	002	011	021						
447	65	081	040	050	060	070	079	089	099	108	118						
448		128	137	147	157	167	176	186	196	205	215						
449		225	234	244	254	263	273	283	292	302	312						
450		321	331	341	350	360	369	379	389	398	408						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 6' = 3960"	S.	4.	68	565	T.	4.	68	563	1° 11' = 4260"	S.	4.	68	564	T.	4.	68	564
1 7 = 4020		4.	68	566		4.	68	563	1 12 = 4320		4.	68	564		4.	68	564
1 8 = 4080		4.	68	566		4.	68	563	1 13 = 4380		4.	68	564		4.	68	564
1 9 = 4140		4.	68	565		4.	68	563	1 14 = 4440		4.	68	564		4.	68	564
1 10 = 4200		4.	68	564		4.	68	563	1 15 = 4500		4.	68	564		4.	68	564

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
450	65	321	331	341	350	360	369	379	389	398	408						
451		418	427	437	447	456	466	475	485	495	504						
452		514	523	533	543	552	562	571	581	591	600						
453		610	619	629	639	648	658	667	677	686	696						
454		706	715	725	734	744	753	763	772	782	792						
455		801	811	820	830	839	849	858	868	877	887						
456		896	906	916	925	935	944	954	963	973	982						
457		992	001	011	020	030	039	049	058	068	077	10					
458	66	087	096	106	115	124	134	143	153	162	172	1 1.0					
459		181	191	200	210	219	229	238	247	257	266	2 2.0					
460		276	285	295	304	314	323	332	342	351	361	3 3.0					
461		370	380	389	398	408	417	427	436	445	455	4 4.0					
462		464	474	483	492	502	511	521	530	539	549	5 5.0					
463		558	567	577	586	596	605	614	624	633	642	6 6.0					
464		652	661	671	680	689	699	708	717	727	736	7 7.0					
465		745	755	764	773	783	792	801	811	820	829	8 8.0					
466		839	848	857	867	876	885	894	904	913	922	9 9.0					
467		932	941	950	960	969	978	987	997	006	015						
468	67	025	034	043	052	062	071	080	089	099	108						
469		117	127	136	145	154	164	173	182	191	201						
470		210	219	228	237	247	256	265	274	284	293						
471		302	311	321	330	339	348	357	367	376	385	9					
472		394	403	413	422	431	440	449	459	468	477	1 0.9					
473		486	495	504	514	523	532	541	550	560	569	2 1.8					
474		578	587	596	605	614	624	633	642	651	660	3 2.7					
475		669	679	688	697	706	715	724	733	742	752	4 3.6					
476		761	770	779	788	797	806	815	825	834	843	5 4.5					
477		852	861	870	879	888	897	906	916	925	934	6 5.4					
478		943	952	961	970	979	988	997	006	015	024	7 6.3					
479	68	034	043	052	061	070	079	088	097	106	115	8 7.2					
480		124	133	142	151	160	169	178	187	196	205	9 8.1					
481		215	224	233	242	251	260	269	278	287	296						
482		305	314	323	332	341	350	359	368	377	386						
483		395	404	413	422	431	440	449	458	467	476						
484		485	494	502	511	520	529	538	547	556	565						
485		574	583	592	601	610	619	628	637	646	655						
486		664	673	681	690	699	708	717	726	735	744						
487		753	762	771	780	789	797	806	815	824	833	1 0.8					
488		842	851	860	869	878	886	895	904	913	922	2 1.6					
489		931	940	949	958	968	975	984	993	002	011	3 2.4					
490	69	020	028	037	046	055	064	073	082	090	099	4 3.2					
491		108	117	126	135	144	152	161	170	179	188	5 4.0					
492		197	206	214	223	232	241	249	258	267	276	6 4.8					
493		285	294	302	311	320	329	338	346	355	364	7 5.6					
494		373	381	390	399	408	417	425	434	443	452	8 6.4					
495		461	469	478	487	496	504	513	522	531	539	9 7.2					
496		548	557	565	574	583	592	601	609	618	627						
497		636	644	653	662	671	679	688	697	705	714						
498		723	732	740	749	758	767	775	784	793	801						
499		810	819	827	836	845	854	862	871	880	888						
500		897	906	914	923	932	940	949	958	966	975						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 15' = 4500"	S.	4.	68	554	T.	4.	68	564	1° 20' = 4800"	S.	4.	68	564	T.	4.	68	565
1 16 = 4560		4.	68	564		4.	68	565	1 21 = 4860		4.	68	563		4.	68	566
1 17 = 4620		4.	68	564		4.	68	565	1 22 = 4920		4.	68	563		4.	68	566
1 18 = 4680		4.	68	564		4.	68	565	1 23 = 4980		4.	68	563		4.	68	566
1 19 = 4740		4.	68	564		4.	68	565	1 24 = 5040		4.	68	563		4.	68	566

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
500	69	897	906	914	923	932	940	949	958	966	975						
501		984	992	.001	.010	.018	.027	.036	.044	.053	.062						
502	70	070	079	088	096	105	114	122	131	140	148						
503		157	165	174	183	191	200	209	217	226	234						
504		243	252	260	269	278	286	295	303	312	321						
505		329	338	346	355	364	372	381	389	398	406						
506		415	424	432	441	449	458	467	475	484	492						
507		501	509	518	526	535	544	552	561	569	578						
508		586	595	603	612	621	629	638	646	655	663						
509		672	680	689	697	706	714	723	731	740	749						
510		757	766	774	783	791	800	808	817	825	834						
511		842	851	859	868	876	885	893	902	910	919						
512		927	935	944	952	961	969	978	986	995	.003						
513	71	012	020	029	037	046	054	063	071	079	088						
514		096	105	113	122	130	139	147	155	164	172						
515		181	189	198	206	214	223	231	240	248	257						
516		265	273	282	290	299	307	315	324	332	341						
517		349	357	366	374	383	391	399	408	416	425						
518		433	441	450	458	466	475	483	492	500	508						
519		517	525	533	542	550	559	567	575	584	592						
520		600	609	617	625	634	642	650	659	667	675						
521		684	692	700	709	717	725	734	742	750	759						
522		767	775	784	792	800	809	817	825	834	842						
523		850	858	867	875	883	892	900	908	917	925						
524		933	941	950	958	966	975	983	991	999	.008						
525	72	016	024	032	041	049	057	066	074	082	090						
526		099	107	115	123	132	140	148	156	165	173						
527		181	189	198	206	214	222	230	239	247	255						
528		263	272	280	288	296	304	313	321	329	337						
529		345	354	362	370	378	387	395	403	411	419						
530		428	436	444	452	460	469	477	485	493	501						
531		509	518	526	534	542	550	558	567	575	583						
532		591	599	607	616	624	632	640	648	656	665						
533		673	681	689	697	705	713	722	730	738	746						
534		754	762	770	779	787	795	803	811	819	827						
535		835	843	852	860	868	876	884	892	900	908						
536		916	925	933	941	949	957	965	973	981	989						
537		997	.006	.014	.022	.030	.038	.046	.054	.062	.070						
538	73	078	086	094	102	111	119	127	135	143	151						
539		159	167	175	183	191	199	207	215	223	231						
540		239	247	255	263	272	280	288	296	304	312						
541		320	328	336	344	352	360	368	376	384	392						
542		400	408	416	424	432	440	448	456	464	472						
543		480	488	496	504	512	520	528	536	544	552						
544		560	568	576	584	592	600	608	616	624	632						
545		640	648	656	664	672	679	687	695	703	711						
546		719	727	735	743	751	759	767	775	783	791						
547		799	807	815	823	830	838	846	854	862	870						
548		878	886	894	902	910	918	926	933	941	949						
549		957	965	973	981	989	997	.005	.013	.020	.028						
550	74	036	044	052	060	068	076	084	092	099	107						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 23' = 4960"	S.	4.	68	553	T.	4.	68	566	1° 28' = 5280"	S.	4.	68	553	T.	4.	68	567
1 24 = 5040		4.	68	553		4.	68	566	1 29 = 5340		4.	68	553		4.	68	567
1 25 = 5100		4.	68	553		4.	68	566	1 30 = 5400		4.	68	553		4.	68	567
1 26 = 5160		4.	68	553		4.	68	567	1 31 = 5460		4.	68	552		4.	68	568
1 27 = 5220		4.	68	553		4.	68	567	1 32 = 5520		4.	68	552		4.	68	568

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N	L	0	1	2	3	4	5	6	7	8	9	P P					
550	74	036	044	052	060	068	076	084	092	099	107						
551		115	123	131	139	147	155	162	170	178	186						
552		194	202	210	218	225	233	241	249	257	265						
553		273	280	288	296	304	312	320	327	335	343						
554		351	359	367	374	382	390	398	406	414	421						
555		429	437	445	453	461	468	476	484	492	500						
556		507	515	523	531	539	547	554	562	570	578						
557		580	588	596	609	617	624	632	640	648	656						
558		663	671	679	687	695	702	710	718	726	733						
559		741	749	757	764	772	780	788	796	803	811						
560		819	827	834	842	850	858	865	873	881	889						
561		896	904	912	920	927	935	943	950	958	966						
562		974	981	989	997	*005	*012	*020	*028	*035	*043	8					
563	75	051	059	066	074	082	089	097	105	113	120	1 0,8					
564		128	136	143	151	159	166	174	182	189	197	2 1,6					
565		205	213	220	228	236	243	251	259	266	274	3 2,4					
566		282	289	297	305	312	320	328	335	343	351	4 3,2					
567		358	366	374	381	389	397	404	412	420	427	5 4,0					
568		435	442	450	458	465	473	481	488	496	504	6 4,8					
569		511	519	526	534	542	549	557	565	572	580	7 5,6					
570		587	595	603	610	618	626	633	641	648	656	8 6,4					
571		664	671	679	686	694	702	709	717	724	732	9 7,2					
572		740	747	755	762	770	778	785	793	800	808						
573		815	823	831	838	846	853	861	868	876	884						
574		891	899	906	914	921	929	937	944	952	959						
575		967	974	982	989	997	*005	*012	*020	*027	*035						
576	76	042	050	057	065	072	080	087	095	103	110						
577		118	125	133	140	148	155	163	170	178	185						
578		193	200	208	215	223	230	238	245	253	260						
579		268	275	283	290	298	306	313	320	328	335						
580		343	350	358	365	373	380	388	395	403	410						
581		418	425	433	440	448	455	462	470	477	485						
582		492	500	507	515	522	530	537	545	552	559	7					
583		567	574	582	589	597	604	612	619	626	634	1 0,7					
584		641	649	656	664	671	678	686	693	701	708	2 1,4					
585		716	723	730	738	745	753	760	768	775	782	3 2,1					
586		790	797	805	812	819	827	834	842	849	856	4 2,8					
587		864	871	879	886	893	901	908	916	923	930	5 3,5					
588		938	945	953	960	967	975	982	989	997	*004	6 4,2					
589	77	012	019	026	034	041	048	056	063	070	078	7 4,9					
590		085	093	100	107	115	122	129	137	144	151	8 5,6					
591		159	166	173	181	188	195	203	210	217	225	9 6,3					
592		232	240	247	254	262	269	276	283	291	298						
593		305	313	320	327	335	342	349	357	364	371						
594		379	386	393	401	408	415	422	430	437	444						
595		452	459	466	474	481	488	495	503	510	517						
596		525	532	539	546	554	561	568	576	583	590						
597		597	605	612	619	627	634	641	648	656	663						
598		670	677	685	692	699	706	714	721	728	735						
599		743	750	757	764	772	779	786	793	801	808						
600		815	822	830	837	844	851	859	866	873	880						
N.	L	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 31' = 5460"	S.	4.	68	552	T.	4.	68	568	1° 36' = 5760"	S.	4.	68	552	T.	4.	68	569
1 32 = 5520		4.	68	552		4.	68	568	1 37 = 5820		4.	68	552		4.	68	569
1 33 = 5580		4.	68	552		4.	68	568	1 38 = 5880		4.	68	552		4.	68	569
1 34 = 5640		4.	68	552		4.	68	568	1 39 = 5940		4.	68	551		4.	68	569
1 35 = 5700		4.	68	552		4.	68	569	1 40 = 6000		4.	68	551		4.	68	570

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
600	77	815	822	830	837	844	851	859	866	873	880						
601		887	895	902	909	916	924	931	938	945	952						
602		960	967	974	981	988	996	003	010	017	025						
603	78	032	039	046	053	061	068	075	082	089	097						
604		104	111	118	125	132	140	147	154	161	168						
605		176	183	190	197	204	211	219	226	233	240						
606		247	254	262	269	276	283	290	297	305	312						
607		319	326	333	340	347	355	362	369	376	383						
608		390	398	405	412	419	426	433	440	447	455						
609		462	469	476	483	490	497	504	512	519	526						
610		533	540	547	554	561	569	576	583	590	597						
611		604	611	618	625	633	640	647	654	661	668						
612		675	682	689	696	704	711	718	725	732	739						
613		746	753	760	767	774	781	789	796	803	810						
614		817	824	831	838	845	852	859	866	873	880						
615		888	895	902	909	916	923	930	937	944	951						
616		958	965	972	979	986	993	000	007	014	021						
617	79	029	036	043	050	057	064	071	078	085	092						
618		099	106	113	120	127	134	141	148	155	162						
619		169	176	183	190	197	204	211	218	225	232						
620		239	246	253	260	267	274	281	288	295	302						
621		309	316	323	330	337	344	351	358	365	372						
622		379	386	393	400	407	414	421	428	435	442						
623		449	456	463	470	477	484	491	498	505	511						
624		518	525	532	539	546	553	560	567	574	581						
625		588	595	602	609	616	623	630	637	644	650						
626		657	664	671	678	685	692	699	706	713	720						
627		727	734	741	748	754	761	768	775	782	789						
628		796	803	810	817	824	831	837	844	851	858						
629		865	872	879	886	893	900	906	913	920	927						
630		934	941	948	955	962	969	975	982	989	996						
631	80	003	010	017	024	030	037	044	051	058	065						
632		072	079	085	092	099	106	113	120	127	134						
633		140	147	154	161	168	175	182	188	195	202						
634		209	216	223	229	236	243	250	257	264	271						
635		277	284	291	298	305	312	318	325	332	339						
636		346	353	359	366	373	380	387	393	400	407						
637		414	421	428	434	441	448	455	462	468	475						
638		482	489	496	502	509	516	523	530	536	543						
639		550	557	564	570	577	584	591	598	604	611						
640		618	625	632	638	645	652	659	665	672	679						
641		686	693	699	706	713	720	726	733	740	747						
642		754	760	767	774	781	787	794	801	808	814						
643		821	828	835	841	848	855	862	868	875	882						
644		889	895	902	909	916	923	929	936	943	949						
645		956	963	969	976	983	990	996	003	010	017						
646	81	023	030	037	043	050	057	064	070	077	084						
647		090	097	104	111	117	124	131	137	144	151						
648		158	164	171	178	184	191	198	204	211	218						
649		224	231	238	245	251	258	265	271	278	285						
650		291	298	305	311	318	325	331	338	345	351						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 40' = 6000"	S.	4.	68	551	T	4.	68	570	1° 45' = 6300"	S.	4.	68	561	T	4.	68	571
1 41 = 6060		4.	68	551		4	68	570	1 46 = 6360		4.	68	551		4.	68	571
1 42 = 6120		4.	68	551		4	68	570	1 47 = 6420		4.	68	550		4.	68	572
1 43 = 6180		4.	68	551		4.	68	570	1 48 = 6480		4.	68	550		4.	68	572
1 44 = 6240		4.	68	551		4.	68	571	1 49 = 6540		4.	68	550		4.	68	572

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
650	81	281	298	305	311	318	325	331	338	345	351						
651		358	365	371	376	383	391	396	403	411	418						
652		425	431	438	445	451	458	465	471	478	485						
653		491	496	505	511	518	525	531	538	544	551						
654		558	564	571	578	584	591	598	604	611	617						
655		624	631	637	644	651	657	664	671	677	684						
656		690	697	704	710	717	723	730	737	743	750						
657		757	763	770	776	783	790	796	803	809	816						
658		823	829	836	842	849	856	862	869	875	882						
659		889	895	902	908	915	921	928	935	941	948						
660		954	961	968	974	981	987	994	1000	1007	1011						
661	82	020	027	033	040	046	053	060	066	073	079	7					
662		086	092	099	106	112	119	125	132	138	145	1					
663		151	158	164	171	178	184	191	197	204	210	2					
664		217	223	230	236	243	249	256	263	269	276	3					
665		282	289	296	302	308	315	321	328	334	341	4					
666		347	354	360	367	373	380	387	393	400	406	5					
667		413	419	426	432	439	445	452	458	465	471	6					
668		478	484	491	497	504	510	517	523	530	536	7					
669		543	549	556	562	569	575	582	588	595	601	8					
670		607	614	620	627	633	640	646	653	659	666	9					
671		672	679	686	692	698	705	711	718	724	730						
672		737	743	750	756	763	769	776	782	789	796						
673		802	808	814	821	827	834	840	847	853	860						
674		866	872	879	886	892	898	905	911	918	924						
675		930	937	943	950	956	963	969	975	982	988						
676		995	1001	1008	1014	1020	1027	1033	1040	1046	1052						
677	83	059	065	072	078	085	091	097	104	110	117						
678		123	129	136	142	149	155	161	168	174	181						
679		187	193	200	206	213	219	225	232	238	245						
680		251	257	264	270	276	283	289	296	302	308						
681		315	321	327	334	340	347	353	359	366	372	6					
682		378	385	391	398	404	410	417	423	429	436	1					
683		442	448	455	461	467	474	480	487	493	499	2					
684		506	512	518	525	531	537	544	550	556	563	3					
685		569	575	582	588	594	601	607	613	620	626	4					
686		632	639	645	651	658	664	670	677	683	689	5					
687		696	702	708	715	721	727	734	740	746	753	6					
688		759	765	771	778	784	790	797	803	809	816	7					
689		822	828	835	841	847	853	860	866	872	879	8					
690		885	891	897	904	910	916	923	929	935	942	9					
691		948	954	960	967	973	979	985	992	998	1004						
692	84	011	017	023	029	036	042	048	055	061	067						
693		073	080	086	092	098	105	111	117	123	130						
694		136	142	148	155	161	167	173	180	186	192						
695		198	205	211	217	223	230	236	242	248	255						
696		261	267	273	280	286	292	298	305	311	317						
697		323	330	336	342	348	354	361	367	373	379						
698		386	392	398	404	410	417	423	429	435	442						
699		449	454	460	466	473	479	485	491	497	504						
700		510	516	522	528	535	541	547	553	559	566						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
1° 48' = 6480"	N.	4.	68	550	T.	4.	68	572	1° 53' = 6780"	N.	4.	68	550	T.	4.	68	573
1 49 = 6540		4.	68	550		4.	68	572	1 54 = 6840		4.	68	550		4.	68	573
1 50 = 6600		4.	68	550		4.	68	572	1 55 = 6900		4.	68	549		4.	68	574
1 51 = 6660		4.	68	550		4.	68	573	1 56 = 6960		4.	68	549		4.	68	574
1 52 = 6720		4.	68	550		4.	68	573	1 57 = 7020		4.	68	549		4.	68	574

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.
700	84	510	516	522	528	535	541	547	553	559	566	<div>7</div> <div>1 0,7</div> <div>2 1,4</div> <div>3 2,1</div> <div>4 2,8</div> <div>5 3,5</div> <div>6 4,2</div> <div>7 4,9</div> <div>8 5,6</div> <div>9 6,3</div>

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N	L	0	1	2	3	4	5	6	7	8	9	P. P.					
750	87	506	512	518	523	529	535	541	547	552	558						
751		564	570	576	581	587	593	599	604	610	616						
752		622	628	633	639	645	651	656	662	668	674						
753		679	685	690	697	703	709	714	720	726	731						
754		737	743	749	754	760	766	772	777	783	789						
755		795	800	806	812	818	823	829	835	841	846						
756		852	858	864	869	875	881	887	892	898	904						
757		910	915	921	927	933	938	944	950	955	961						
758		967	973	978	984	990	996	001	007	013	018						
759	88	024	030	036	041	047	053	058	064	070	076						
760		081	087	093	098	104	110	116	121	127	133						
761		138	144	150	156	161	167	173	178	184	190	6					
762		195	201	207	213	218	224	230	235	241	247	1 0.6					
763		252	258	264	270	275	281	287	292	298	304	2 1.2					
764		309	315	321	326	332	338	343	349	355	360	3 1.8					
765		366	372	377	383	389	395	400	406	412	417	4 2.4					
766		423	429	434	440	446	451	457	463	468	474	5 3.0					
767		480	485	491	497	502	508	513	519	525	530	6 3.6					
768		536	542	547	553	559	564	570	576	581	587	7 4.2					
769		593	598	604	610	616	621	627	632	638	643	8 4.8					
770		649	655	660	666	672	677	683	689	694	700	9 5.4					
771		705	711	717	722	728	734	739	745	750	756						
772		762	767	773	779	784	790	796	801	807	812						
773		818	824	829	835	840	846	852	857	863	868						
774		874	880	885	891	897	902	908	913	919	925						
775		930	936	941	947	953	958	964	969	975	981						
776		986	992	997	003	009	014	020	025	031	037						
777	90	042	048	053	059	064	070	076	081	087	092						
778		098	104	109	115	120	126	131	137	143	148						
779		154	159	165	170	176	182	187	193	198	204						
780		209	215	221	226	232	237	243	248	254	260						
781		265	271	276	282	287	293	298	304	310	315	5					
782		321	326	332	337	343	348	354	360	365	371	1 0.5					
783		376	382	387	393	398	404	409	415	421	426	2 1.0					
784		432	437	443	448	454	459	465	470	476	481	3 1.5					
785		487	492	498	504	509	515	520	526	531	537	4 2.0					
786		542	548	553	559	564	570	575	581	586	592	5 2.5					
787		597	603	609	614	620	625	631	636	642	647	6 3.0					
788		653	658	664	669	675	680	686	691	697	702	7 3.5					
789		708	713	719	724	730	735	741	746	752	757	8 4.0					
790		763	768	774	779	785	790	796	801	807	812	9 4.5					
791		818	823	829	834	840	845	851	856	862	867						
792		873	878	883	889	894	900	905	911	916	922						
793		927	933	938	944	949	955	960	966	971	977						
794		982	988	993	998	004	009	015	020	026	031						
795	90	037	042	048	053	059	064	069	075	080	086						
796		091	097	102	108	113	119	124	129	135	140						
797		146	151	157	162	168	173	179	184	189	195						
798		200	206	211	217	222	227	233	238	244	249						
799		255	260	266	271	276	282	287	293	298	304						
800		309	314	320	325	331	336	342	347	352	358						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
2° 5' = 7500"	S.	4.	68	548	T.	4.	68	577	2° 10' = 7800"	S.	4.	68	547	T.	4.	68	578
2 6 = 7560		4.	68	548		4.	68	577	2 11 = 7860		4.	68	547		4.	68	579
2 7 = 7620		4.	68	548		4.	68	577	2 12 = 7920		4.	68	547		4.	68	579
2 8 = 7680		4.	68	547		4.	68	577	2 13 = 7980		4.	68	547		4.	68	579
2 9 = 7740		4.	68	547		4.	68	578	2 14 = 8040		4.	68	546		4.	68	579



TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
800	90	309	314	320	325	331	336	342	347	352	358						
		363	369	374	380	385	390	396	401	407	412						
		417	423	428	434	439	445	450	456	461	466						
		472	477	482	488	493	499	504	509	515	520						
804		526	531	536	542	547	553	558	563	569	574						
805		580	585	590	596	601	607	612	617	623	628						
806		634	639	644	650	655	660	666	671	677	682						
807		687	693	698	703	709	714	720	725	730	736						
808		741	747	752	757	763	768	773	779	784	789						
809		795	800	806	811	816	822	827	832	838	843						
810		849	854	859	865	870	875	881	886	891	897						
811		902	907	912	918	924	929	934	940	945	950	6					
812		956	961	966	972	977	982	988	993	998	004	1					
813	91	009	014	020	025	030	036	041	046	052	057	2					
814		062	068	073	078	084	089	094	100	105	110	3					
815		116	121	126	132	137	142	148	153	158	164	4					
816		169	174	180	185	190	196	201	206	212	217	5					
817		222	228	233	238	243	249	254	259	265	270	6					
818		275	281	286	291	297	302	307	312	318	323	7					
819		328	334	339	344	350	355	360	365	371	376	8					
820		381	387	392	397	403	408	413	418	424	429	9					
821		434	440	445	450	456	461	466	471	477	482						
822		487	492	498	503	508	514	519	524	529	535						
823		540	545	551	556	561	566	572	577	582	587						
824		593	598	603	609	614	619	624	630	635	640						
825		645	651	656	661	666	672	677	682	687	693						
826		698	703	709	714	719	724	730	735	740	745						
827		751	756	761	766	772	777	782	787	793	798						
828		803	808	814	819	824	829	834	840	845	850						
829		855	861	866	871	876	882	887	892	897	903						
830		908	913	918	924	929	934	939	944	950	955	5					
831		960	965	971	976	981	986	991	997	002	007	1					
832	92	012	018	023	028	033	038	044	049	054	059	2					
833		065	070	075	080	085	091	096	101	106	111	3					
834		117	122	127	132	137	142	148	153	158	163	4					
835		169	174	179	184	189	195	200	205	210	215	5					
836		221	226	231	236	241	247	252	257	262	267	6					
837		273	278	283	288	293	298	303	309	314	319	7					
838		324	330	335	340	345	350	355	361	366	371	8					
839		376	381	387	392	397	402	407	412	418	423	9					
840		428	433	438	443	449	454	459	464	469	474						
841		480	485	490	495	500	506	511	516	521	526						
842		531	536	542	547	552	557	562	567	572	578						
843		583	588	593	598	603	609	614	619	624	629						
844		634	639	645	650	655	660	665	670	675	681						
845		686	691	696	701	706	711	716	722	727	732						
846		737	742	747	752	758	763	768	773	778	783						
847		788	793	799	804	809	814	819	824	829	834						
848		840	845	850	855	860	865	870	875	881	886						
849		891	896	901	906	911	916	921	927	932	937						
850		942	947	952	957	962	967	973	978	983	988						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
2° 13' = 7980"	S	4	68	547	T.	4	68	579	2° 18' = 8280"	S.	4	68	546	T.	4	68	581
2 14 = 8040		4	68	546		4	68	579	2 19 = 8340		4	68	546		4	68	581
2 15 = 8100		4	68	546		4	68	580	2 20 = 8400		4	68	545		4	68	582
2 16 = 8160		4	68	546		4	68	580	2 21 = 8460		4	68	545		4	68	582
2 17 = 8220		4	68	546		4	68	580	2 22 = 8520		4	68	545		4	68	582

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
840	92	942	947	952	957	962	967	972	976	983	988						
851		993	996	003	008	013	018	024	029	034	039						
852	98	044	049	054	059	064	069	075	080	085	090						
853		095	100	105	110	115	120	125	131	136	141						
854		146	151	156	161	166	171	176	181	186	192						
855		197	202	207	212	217	222	227	232	237	242						
856		247	252	258	263	268	273	278	283	288	293	6					
857		298	303	308	313	318	323	328	334	339	344	1 0.8					
858		349	354	359	364	369	374	379	384	389	394	2 1.4					
859		399	404	409	414	420	425	430	435	440	445	3 1.8					
860		450	455	460	465	470	475	480	485	490	495	4 2.4					
861		500	505	510	515	520	525	531	536	541	546	5 3.0					
862		551	556	561	566	571	576	581	586	591	596	6 3.6					
863		601	606	611	616	621	626	631	636	641	646	7 1.2					
864		651	656	661	666	671	676	682	687	692	697	8 4.8					
865		702	707	712	717	722	727	732	737	742	747	9 5.4					
866		752	757	762	767	772	777	782	787	792	797						
867		802	807	812	817	822	827	832	837	842	847						
868		852	857	862	867	872	877	882	887	892	897						
869		902	907	912	917	922	927	932	937	942	947						
870		952	957	962	967	972	977	982	987	992	997	5					
871	94	002	007	012	017	022	027	032	037	042	047	1 0.5					
872		052	057	062	067	072	077	082	086	091	096	2 1.0					
873		101	106	111	116	121	126	131	136	141	146	3 1.5					
874		151	156	161	166	171	176	181	186	191	196	4 2.0					
875		201	206	211	216	221	226	231	236	240	245	5 2.5					
876		250	255	260	265	270	275	280	285	290	295	6 3.0					
877		300	305	310	315	320	325	330	335	340	345	7 3.5					
878		349	354	359	364	369	374	379	384	389	394	8 4.0					
879		399	404	409	414	419	424	429	433	438	443	9 4.5					
880		448	453	458	463	468	473	478	483	488	493						
881		499	503	507	512	517	522	527	532	537	542						
882		547	552	557	562	567	571	576	581	586	591						
883		596	601	606	611	616	621	626	630	635	640						
884		645	650	655	660	665	670	675	680	685	690						
885		694	699	704	709	714	719	724	729	734	738						
886		743	748	753	758	763	768	773	778	783	787	4					
887		792	797	802	807	812	817	822	827	832	836	1 0.4					
888		841	846	851	856	861	866	871	876	880	885	2 0.8					
889		890	895	900	905	910	915	919	924	929	934	3 1.2					
890		939	944	949	954	959	963	968	973	978	983	4 1.6					
891		988	993	998	002	007	012	017	022	027	032	5 2.0					
892	96	036	041	046	051	056	061	066	071	075	080	6 2.4					
893		085	090	095	100	105	109	114	119	124	129	7 2.8					
894		134	139	143	148	153	158	163	168	173	177	8 3.2					
895		182	187	192	197	202	207	211	216	221	226	9 3.6					
896		231	236	240	245	250	255	260	265	270	274						
897		279	284	289	294	299	303	308	313	318	323						
898		328	332	337	342	347	352	357	361	366	371						
899		376	381	386	390	395	400	405	410	415	419						
900		424	429	434	439	444	448	453	458	463	468						
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.					
2° 21' = 8460"	S.	4	68	545	T	4	68	582	2° 26' = 8760"	S.	4	68	544	T	4	68	584
2 22 = 8520		4	68	545		4	68	582	2 27 = 8820		4	68	544		4	68	584
2 23 = 8580		4	68	545		4	68	583	2 28 = 8880		4	68	544		4	68	584
2 24 = 8640		4	68	545		4	68	583	2 29 = 8940		4	68	544		4	68	585
2 25 = 8700		4	68	545		4	68	583	2 30 = 9000		4	68	544		4	68	585

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.							
900	95	424	429	434	439	444	448	453	458	463	468								
901		472	477	482	487	492	497	501	506	511	516								
902		521	525	530	535	540	545	550	554	559	564								
903		569	574	578	583	588	593	598	602	607	612								
904		617	622	626	631	636	641	646	650	655	660								
905		665	670	674	679	684	689	694	698	703	708								
906		713	718	722	727	732	737	742	746	751	756								
907		761	766	770	775	780	785	789	794	799	804								
908		809	813	818	823	828	832	837	842	847	852								
909		856	861	866	871	875	880	885	890	895	899								
910		904	909	914	918	923	928	933	938	942	947								
911		952	957	961	966	971	976	980	985	990	995								
912		999	.004	.009	.014	.019	.023	.028	.033	.038	.042								
913	96	047	052	057	061	066	071	076	080	085	090								
914		095	099	104	109	114	118	123	128	133	137								
915		142	147	152	156	161	166	171	175	180	185								
916		190	194	199	204	209	213	218	223	227	232								
917		237	242	246	251	256	261	265	270	275	280								
918		284	289	294	298	303	308	313	317	322	327								
919		332	336	341	346	350	355	360	365	369	374								
920		379	384	388	393	398	402	407	412	417	421								
921		426	431	435	440	445	450	454	459	464	468								
922		473	478	483	487	492	497	501	506	511	515								
923		520	525	530	534	539	544	548	553	558	562								
924		567	572	577	581	586	591	595	600	605	609								
925		614	619	624	628	633	638	642	647	652	656								
926		661	665	670	675	680	685	689	694	699	703								
927		708	713	717	722	727	731	736	741	745	750								
928		755	759	764	769	774	778	783	788	792	797								
929		802	806	811	816	820	825	830	834	839	844								
930		848	853	858	862	867	872	876	881	886	890								
931		895	900	904	909	914	918	923	928	932	937								
932		942	946	951	956	960	965	970	974	979	984								
933		988	993	997	.002	.007	.011	.016	.021	.025	.030								
934	97	035	039	044	049	053	058	063	067	072	077								
935		081	086	090	095	100	104	109	114	118	123								
936		128	132	137	142	146	151	155	160	165	169								
937		174	179	183	188	192	197	202	206	211	216								
938		220	225	230	234	239	243	248	253	257	262								
939		267	271	276	280	285	290	294	299	304	308								
940		313	317	322	327	331	336	340	345	350	354								
941		359	364	368	373	377	382	387	391	396	400								
942		405	410	414	419	424	428	433	437	442	447								
943		451	456	460	465	470	474	479	483	488	493								
944		497	502	506	511	516	520	525	529	534	539								
945		543	548	552	557	562	566	571	575	580	585								
946		589	594	598	603	607	612	617	621	626	630								
947		635	640	644	649	653	658	663	667	672	676								
948		681	685	690	695	699	704	708	713	717	722								
949		727	731	736	740	745	749	754	759	763	768								
950		772	777	782	786	791	795	800	804	809	813								
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.							
2° 30' = 9000"	S.	4.	68	544	T.	4.	68	585	2° 35' = 9360"	S.	4.	68	543	T.	4.	68	587		
2 31 = 9060			4.	68	544		4.	68	585	2 36 = 9360			4.	68	543		4.	68	587
2 32 = 9120			4.	68	543		4.	68	586	2 37 = 9420			4.	68	542		4.	68	588
2 33 = 9180			4.	68	543		4.	68	586	2 38 = 9480			4.	68	542		4.	68	588
2 34 = 9240			4.	68	543		4.	68	587	2 39 = 9540			4.	68	542		4.	68	588

TABLE 20.—Five-place logarithms of natural numbers—Continued.

N	L	0	1	2	3	4	5	6	7	8	9	P. P.						
950	97	772	777	782	786	791	795	800	804	809	813							
951		818	823	827	832	836	841	845	850	855	859							
952		864	868	873	877	882	886	891	896	900	905							
953		909	914	918	923	928	932	937	941	946	950							
954		955	959	964	968	973	978	982	987	991	996							
955	98	000	005	009	014	019	023	028	032	037	041							
956		046	050	055	059	064	068	073	078	082	087							
957		091	096	100	105	109	114	118	123	127	132							
958		137	141	146	150	155	159	164	168	173	177							
959		182	186	191	195	200	204	209	214	218	223							
960		227	232	236	241	245	250	254	259	263	268							
961		272	277	281	286	290	295	299	304	308	313	5						
962		318	322	327	331	336	340	345	349	354	358	1 0,5						
963		363	367	372	376	381	385	390	394	399	403	2 1,0						
964		408	412	417	421	426	430	435	439	444	448	3 1,5						
965		453	457	462	466	471	475	480	484	489	493	4 2,0						
966		498	502	507	511	516	520	525	529	534	538	5 2,5						
967		543	547	552	556	561	565	570	574	579	583	6 3,0						
968		588	592	597	601	606	610	614	619	623	628	7 3,5						
969		632	637	641	646	650	655	659	664	668	673	8 4,0						
970		677	682	686	691	695	700	704	709	713	717	9 4,5						
971		722	726	731	735	740	744	749	753	758	762							
972		767	771	776	780	784	789	793	798	802	807							
973		811	816	820	825	829	834	838	843	847	851							
974		856	860	865	869	874	878	883	887	892	896							
975		900	905	909	914	918	923	927	932	936	941							
976		945	949	954	958	963	967	972	976	981	985							
977		989	994	998	003	007	012	016	021	025	029							
978	99	034	038	043	047	052	056	061	065	069	074							
979		078	083	087	092	096	100	105	109	114	118							
980		123	127	131	136	140	145	149	154	158	162							
981		167	171	176	180	185	189	193	198	202	207	4						
982		211	216	220	224	229	233	238	242	247	251	1 0,4						
983		255	260	264	269	273	277	282	286	291	295	2 0,8						
984		300	304	308	313	317	322	326	330	335	339	3 1,2						
985		344	348	352	357	361	366	370	374	379	383	4 1,6						
986		388	392	396	401	405	410	414	419	423	427	5 2,0						
987		432	436	441	445	449	454	458	463	467	471	6 2,4						
988		476	480	484	489	493	498	502	506	511	515	7 2,8						
989		520	524	528	533	537	542	546	550	555	559	8 3,2						
990		564	568	572	577	581	585	590	594	599	603	9 3,6						
991		607	612	616	621	625	629	634	638	642	647							
992		651	656	660	664	669	673	677	682	686	691							
993		696	699	704	708	712	717	721	726	730	734							
994		739	743	747	752	756	760	765	769	774	778							
995		782	787	791	795	800	804	808	813	817	822							
996		826	830	835	839	843	848	852	856	861	865							
997		870	874	878	883	887	891	896	900	904	909							
998		913	917	922	926	930	935	939	944	948	952							
999		957	961	965	970	974	978	983	987	991	996							
1000	00	000	004	009	013	017	022	026	030	035	039							
N.	L.	0	1	2	3	4	5	6	7	8	9	P. P.						
2° 38' = 9490"	A.	4.68	542				T.	4.68	588			2° 43' = 9780"	B.	4.68	541	T.	4.68	590
2 39 = 9540		4.68	542					4.68	588			2 44 = 9840		4.68	541		4.68	590
2 40 = 9600		4.68	542					4.68	589			2 45 = 9900		4.68	541		4.68	591
2 41 = 9660		4.68	542					4.68	589			2 46 = 9960		4.68	541		4.68	591
2 42 = 9720		4.68	541					4.68	590			2 47 = 10020		4.68	540		4.68	592

Formula for using quantities  $S$  and  $T$ :

$$\log \sin a = \log a'' + S.$$

$$\log \tan a = \log a'' + T.$$

$$\log \cot a = \text{a. c. } \log a'' + \text{a. c. } \log T.$$

$$\log a'' = \log \sin a - S = \log \tan a - T.$$

$$\log \cos a = \log (90^\circ - a)'' + S.$$

$$\log \cot a = \log (90^\circ - a)'' + T.$$

$$\log \tan a = \text{a. c. } \log (90^\circ - a)'' + \text{a. c. } \log T.$$

$$\log (90^\circ - a)'' = \log \cos a - S = \log \cot a - T.$$

TABLE 21.—Five-place logarithms of circular functions, expressed in arc and time.

0°			0°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
0	0	0	—	—	—	—	—	0.00 000	60	60	0
	4	1	6. 46 373		6. 46 373		8. 58 627	0.00 000	59		56
	8	2	6. 76 476	30108	6. 76 476	30108	3. 28 524	0.00 000	58		52
	12	3	6. 94 085	17609	6. 94 085	17609	3. 06 915	0.00 000	57		48
	16	4	7. 06 579	12494	7. 06 579	12494	2. 93 421	0.00 000	56		44
			9691		9691						
0	20	5	7. 16 270		7. 16 270		2. 83 730	0.00 000	55	59	40
	24	6	7. 24 189	7918	7. 24 189	7918	2. 75 812	0.00 000	54		36
	28	7	7. 30 882	6694	7. 30 882	6694	2. 69 118	0.00 000	53		32
	32	8	7. 36 682	5800	7. 36 682	5800	2. 63 318	0.00 000	52		28
	36	9	7. 41 797	5115	7. 41 797	5115	2. 58 203	0.00 000	51		24
			4576		4576						
0	40	10	7. 46 373		7. 46 373		2. 53 627	0.00 000	50	59	20
	44	11	7. 50 512	4139	7. 50 512	4139	2. 49 488	0.00 000	49		16
	48	12	7. 54 291	3779	7. 54 291	3779	2. 46 709	0.00 000	48		12
	52	13	7. 57 767	3476	7. 57 767	3476	2. 42 233	0.00 000	47		8
	56	14	7. 60 985	3218	7. 60 985	3219	2. 39 014	0.00 000	46		4
			2997		2997						
1	0	15	7. 63 982		7. 63 982		2. 36 018	0.00 000	45	59	0
	4	16	7. 66 784	2802	7. 66 785	2803	2. 33 215	0.00 000	44		56
	8	17	7. 69 417	2633	7. 69 418	2633	2. 30 582	9.99 999	43		52
	12	18	7. 71 900	2483	7. 71 900	2482	2. 28 100	9.99 999	22		48
	16	19	7. 74 248	2348	7. 74 248	2348	2. 25 752	9.99 999	41		44
			2227		2227						
1	20	20	7. 76 476		7. 76 476		2. 23 524	9.99 999	40	58	40
	24	21	7. 78 594	2119	7. 78 595	2119	2. 21 405	9.99 999	39		36
	28	22	7. 80 615	2021	7. 80 615	2020	2. 19 385	9.99 999	38		32
	32	23	7. 82 546	1930	7. 82 546	1931	2. 17 454	9.99 999	37		28
	36	24	7. 84 393	1848	7. 84 394	1848	2. 16 606	9.99 999	36		24
			1773		1773						
1	40	25	7. 86 166		7. 86 167		2. 13 833	9.99 999	35	58	20
	44	26	7. 87 870	1704	7. 87 871	1704	2. 12 129	9.99 999	34		16
	48	27	7. 89 509	1639	7. 89 510	1639	2. 10 490	9.99 999	33		12
	52	28	7. 91 088	1579	7. 91 089	1579	2. 08 911	9.99 999	32		8
	56	29	7. 92 612	1524	7. 92 613	1524	2. 07 387	9.99 998	31		4
			1472		1473						
2	0	30	7. 94 064		7. 94 066		2. 06 914	9.99 998	20	58	0
	4	31	7. 96 508	1424	7. 96 510	1424	2. 04 490	9.99 998	29		56
	8	32	7. 96 887	1379	7. 96 889	1379	2. 03 111	9.99 998	28		52
	12	33	7. 98 223	1336	7. 98 225	1336	2. 01 775	9.99 998	27		48
	16	34	7. 99 520	1297	7. 99 522	1297	2. 00 478	9.99 998	26		44
			1259		1259						
2	20	35	8. 00 779		8. 00 781		1. 99 219	9.99 998	25	57	40
	24	36	8. 02 002	1223	8. 02 004	1223	1. 97 936	9.99 998	24		36
	28	37	8. 03 192	1190	8. 03 194	1190	1. 96 806	9.99 997	23		32
	32	38	8. 04 350	1158	8. 04 353	1159	1. 96 647	9.99 997	22		28
	36	39	8. 05 478	1128	8. 05 481	1128	1. 94 519	9.99 997	21		24
			1100		1100						
2	40	40	8. 06 578		8. 06 581		1. 93 419	9.99 997	20	57	20
	44	41	8. 07 650	1072	8. 07 653	1072	1. 92 347	9.99 997	19		16
	48	42	8. 08 696	1046	8. 08 700	1047	1. 91 300	9.99 997	18		12
	52	43	8. 09 718	1022	8. 09 722	1022	1. 90 278	9.99 997	17		8
	56	44	8. 10 717	999	8. 10 720	998	1. 89 280	9.99 996	16		4
			976		976						
3	0	45	8. 11 698		8. 11 696		1. 88 304	9.99 996	15	57	0
	4	46	8. 12 647	954	8. 12 651	955	1. 87 349	9.99 996	14		56
	8	47	8. 13 591	934	8. 13 595	934	1. 86 415	9.99 996	13		52
	12	48	8. 14 496	914	8. 14 500	915	1. 85 500	9.99 996	12		48
	16	49	8. 15 391	896	8. 15 395	895	1. 84 605	9.99 996	11		44
			877		878						
3	20	50	8. 16 268		8. 16 273		1. 83 727	9.99 995	10	56	40
	24	51	8. 17 128	860	8. 17 133	860	1. 82 867	9.99 995	9		36
	28	52	8. 17 971	843	8. 17 976	843	1. 82 024	9.99 995	8		32
	32	53	8. 18 798	827	8. 18 804	828	1. 81 196	9.99 995	7		28
	36	54	8. 19 610	812	8. 19 616	812	1. 80 384	9.99 995	6		24
			797		797						
3	40	55	8. 20 407		8. 20 413		1. 79 587	9.99 994	5	56	20
	44	56	8. 21 189	782	8. 21 195	782	1. 78 805	9.99 994	4		16
	48	57	8. 21 958	769	8. 21 964	769	1. 78 036	9.99 994	3		12
	52	58	8. 22 713	755	8. 22 720	756	1. 77 280	9.99 994	2		8
	56	59	8. 23 456	743	8. 23 462	742	1. 76 538	9.99 994	1		4
			730		730						
4	0	60	8. 24 186		8. 24 192		1. 75 808	9.99 993	0	56	0
			L. Cos.	d	L. Cotg	c. d.	L. Tang	L. Sin.		m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			1°								
m.	n.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
4	0	0	8.24 186		8.24 192		1.75 808	9.99 998	60	56	0
	4	1	8.24 903	717	8.24 910	718	1.75 090	9.99 993	59		56
	8	2	8.25 609	706	8.25 616	706	1.74 384	9.99 993	58		56
	12	3	8.26 304	696	8.26 312	696	1.73 688	9.99 993	57		46
	16	4	8.26 988	684	8.26 996	684	1.73 004	9.99 992	56		44
				673		673					
4	20	5	8.27 661		8.27 669		1.72 331	9.99 992	55	56	40
	24	6	8.28 324	663	8.28 332	663	1.71 608	9.99 992	54		36
	28	7	8.28 977	653	8.28 986	654	1.71 014	9.99 992	53		32
	32	8	8.29 621	644	8.29 629	643	1.70 371	9.99 992	52		28
	36	9	8.30 255	634	8.30 263	634	1.69 737	9.99 991	51		24
				624		623					
4	40	10	8.30 879		8.30 888		1.69 112	9.99 991	50	56	20
	44	11	8.31 496	616	8.31 505	617	1.68 495	9.99 991	49		16
	48	12	8.32 103	608	8.32 112	607	1.67 888	9.99 990	48		12
	52	13	8.32 702	599	8.32 711	599	1.67 289	9.99 990	47		8
	56	14	8.33 292	590	8.33 302	591	1.66 698	9.99 990	46		4
				583		584					
5	0	15	8.33 875		8.33 886		1.66 114	9.99 990	45	56	0
	4	16	8.34 450	575	8.34 461	575	1.65 530	9.99 989	44		56
	8	17	8.35 018	568	8.35 029	568	1.64 971	9.99 989	43		52
	12	18	8.35 579	560	8.35 590	561	1.64 410	9.99 989	42		48
	16	19	8.36 131	553	8.36 143	553	1.63 857	9.99 988	41		44
				547		546					
5	20	20	8.36 678		8.36 690		1.63 311	9.99 988	40	54	40
	24	21	8.37 217	539	8.37 229	540	1.62 771	9.99 988	39		36
	28	22	8.37 750	533	8.37 762	533	1.62 238	9.99 988	38		32
	32	23	8.38 276	526	8.38 288	527	1.61 711	9.99 987	37		28
	36	24	8.38 796	520	8.38 809	520	1.61 191	9.99 987	36		24
				514		514					
5	40	25	8.39 310		8.39 323		1.60 677	9.99 987	35	54	20
	44	26	8.39 818	508	8.39 833	509	1.60 168	9.99 986	34		16
	48	27	8.40 320	502	8.40 334	502	1.59 666	9.99 986	33		12
	52	28	8.40 816	496	8.40 830	496	1.59 170	9.99 986	32		8
	56	29	8.41 307	491	8.41 321	491	1.58 679	9.99 985	31		4
				485		486					
6	0	30	8.41 792		8.41 807		1.58 193	9.99 985	30	54	0
	4	31	8.42 272	480	8.42 287	480	1.57 713	9.99 985	29		56
	8	32	8.42 746	474	8.42 762	475	1.57 238	9.99 984	28		52
	12	33	8.43 216	470	8.43 232	470	1.56 768	9.99 984	27		48
	16	34	8.43 680	464	8.43 696	464	1.56 304	9.99 984	26		44
				459		460					
6	20	35	8.44 139		8.44 156		1.55 844	9.99 983	25	53	40
	24	36	8.44 594	455	8.44 611	455	1.55 389	9.99 983	24		36
	28	37	8.45 044	450	8.45 061	450	1.54 939	9.99 983	23		32
	32	38	8.45 489	445	8.45 507	446	1.54 493	9.99 982	22		28
	36	39	8.45 930	441	8.45 948	441	1.54 052	9.99 982	21		24
				436		437					
6	40	40	8.46 361		8.46 386		1.53 615	9.99 982	20	53	20
	44	41	8.46 799	433	8.46 817	432	1.53 183	9.99 981	19		16
	48	42	8.47 236	427	8.47 245	428	1.52 755	9.99 981	18		12
	52	43	8.47 650	424	8.47 669	424	1.52 331	9.99 981	17		8
	56	44	8.48 069	419	8.48 089	420	1.51 913	9.99 980	16		4
				416		416					
7	0	45	8.48 485		8.48 505		1.51 495	9.99 980	15	53	0
	4	46	8.48 896	411	8.48 917	412	1.51 083	9.99 979	14		56
	8	47	8.49 304	408	8.49 325	408	1.50 675	9.99 979	13		52
	12	48	8.49 708	404	8.49 729	404	1.50 271	9.99 979	12		48
	16	49	8.50 108	400	8.50 130	401	1.49 870	9.99 978	11		44
				396		397					
7	20	50	8.50 504		8.50 527		1.49 473	9.99 978	10	52	40
	24	51	8.50 897	393	8.50 920	393	1.49 080	9.99 977	9		36
	28	52	8.51 287	390	8.51 310	390	1.48 690	9.99 977	8		32
	32	53	8.51 673	386	8.51 696	386	1.48 304	9.99 977	7		28
	36	54	8.52 055	382	8.52 079	383	1.47 921	9.99 976	6		24
				379		380					
7	40	55	8.52 434		8.52 459		1.47 541	9.99 976	5	52	20
	44	56	8.52 810	376	8.52 835	376	1.47 165	9.99 975	4		16
	48	57	8.53 183	373	8.53 208	373	1.46 792	9.99 975	3		12
	52	58	8.53 552	369	8.53 578	370	1.46 422	9.99 974	2		8
	56	59	8.53 919	367	8.53 945	367	1.46 055	9.99 974	1		4
				363		363					
8	0	60	8.54 282		8.54 308		1.45 692	9.99 974	0	52	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.		m.	n.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		2°							
in.	s.			L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.
8	0	0		8.54 282		8.54 308		1 45 692	9.99 974
	4	1		8.54 642	360	8.54 669	361	1 45 331	9.99 971
	8	2		8.54 999	357	8.55 027	358	1 44 973	9.99 973
	12	3		8.55 354	355	8.55 382	355	1 44 618	9.99 972
	16	4		8.55 705	351	8.55 734	352	1 44 266	9.99 972
					349		349		
8	20	5		8.56 054		8.56 083		1 43 917	9.99 971
	24	6		8.56 400	846	8.56 429	846	1 43 571	9.99 971
	28	7		8.56 743	843	8.56 773	844	1 43 227	9.99 970
	32	8		8.57 084	841	8.57 114	841	1 42 886	9.99 970
	36	9		8.57 421	837	8.57 452	838	1 42 548	9.99 969
					836		836		
8	40	10		8.57 757		8.57 788		1 42 212	9.99 969
	44	11		8.58 089	832	8.58 121	833	1 41 879	9.99 968
	48	12		8.58 419	830	8.58 451	830	1 41 549	9.99 968
	52	13		8.58 747	828	8.58 779	828	1 41 221	9.99 967
	56	14		8.59 072	825	8.59 105	826	1 40 895	9.99 967
					823		823		
9	0	15		8.59 395		8.59 428		1 40 572	9.99 967
	4	16		8.59 715	820	8.59 749	821	1 40 251	9.99 966
	8	17		8.60 033	818	8.60 068	819	1 39 932	9.99 966
	12	18		8.60 349	816	8.60 384	816	1 39 616	9.99 965
	16	19		8.60 662	813	8.60 698	814	1 39 302	9.99 964
					811		811		
9	20	20		8.60 973		8.61 009		1 38 991	9.99 964
	24	21		8.61 282	809	8.61 319	810	1 38 681	9.99 963
	28	22		8.61 589	807	8.61 626	807	1 38 374	9.99 963
	32	23		8.61 894	806	8.61 931	806	1 38 069	9.99 962
	36	24		8.62 196	802	8.62 234	803	1 37 766	9.99 962
					801		801		
9	40	25		8.62 497		8.62 535		1 37 465	9.99 961
	44	26		8.62 795	298	8.62 834	299	1 37 166	9.99 961
	48	27		8.63 091	296	8.63 131	297	1 36 869	9.99 960
	52	28		8.63 385	294	8.63 426	295	1 36 574	9.99 960
	56	29		8.63 678	293	8.63 718	292	1 36 282	9.99 959
					290		291		
10	0	30		8.63 968		8.64 009		1 35 991	9.99 959
	4	31		8.64 256	288	8.64 298	289	1 35 702	9.99 958
	8	32		8.64 543	287	8.64 585	287	1 35 415	9.99 958
	12	33		8.64 827	284	8.64 870	285	1 35 130	9.99 957
	16	34		8.65 110	283	8.65 154	284	1 34 846	9.99 956
					281		281		
10	20	35		8.65 391		8.65 435		1 34 565	9.99 956
	24	36		8.65 670	279	8.65 715	280	1 34 285	9.99 955
	28	37		8.65 947	277	8.65 993	278	1 34 007	9.99 955
	32	38		8.66 223	276	8.66 269	276	1 33 731	9.99 954
	36	39		8.66 497	274	8.66 543	274	1 33 457	9.99 954
					272		273		
10	40	40		8.66 769		8.66 816		1 33 184	9.99 953
	44	41		8.67 039	270	8.67 087	271	1 32 913	9.99 952
	48	42		8.67 308	269	8.67 356	269	1 32 644	9.99 952
	52	43		8.67 575	267	8.67 624	268	1 32 376	9.99 951
	56	44		8.67 841	266	8.67 890	266	1 32 110	9.99 951
					263		264		
11	0	45		8.68 104		8.68 154		1 31 846	9.99 950
	4	46		8.68 367	263	8.68 417	263	1 31 583	9.99 949
	8	47		8.68 627	260	8.68 678	261	1 31 322	9.99 949
	12	48		8.68 886	259	8.68 938	260	1 31 062	9.99 948
	16	49		8.69 144	258	8.69 196	258	1 30 804	9.99 948
					256		257		
11	20	50		8.69 400		8.69 453		1 30 547	9.99 947
	24	51		8.69 654	254	8.69 708	255	1 30 292	9.99 946
	28	52		8.69 907	253	8.69 962	254	1 30 038	9.99 946
	32	53		8.70 159	252	8.70 214	252	1 29 786	9.99 945
	36	54		8.70 409	250	8.70 465	251	1 29 535	9.99 944
					249		249		
11	40	55		8.70 658		8.70 714		1 29 286	9.99 944
	44	56		8.70 905	247	8.70 962	248	1 29 038	9.99 943
	48	57		8.71 151	246	8.71 208	246	1 28 792	9.99 942
	52	58		8.71 395	244	8.71 453	245	1 28 547	9.99 942
	56	59		8.71 638	243	8.71 697	244	1 28 303	9.99 941
					242		243		
12	0	60		8.71 880		8.71 940		1 28 060	9.99 940
				L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.
									in. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		3°							
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	
12	0	0	8.71 880		8.71 940		1.28 060	9.99 940	00 48 0
	4	1	8.72 120	240	8.72 181	241	1.27 819	9.99 940	59 56
	8	2	8.72 360	239	8.72 420	239	1.27 580	9.99 939	58 52
	12	3	8.72 597	238	8.72 659	239	1.27 341	9.99 938	57 48
	16	4	8.72 834	237	8.72 896	237	1.27 104	9.99 938	56 44
				235		236			
12	20	5	8.73 069		8.73 132		1.26 868	9.99 937	55 47 40
	24	6	8.73 303	234	8.73 366	234	1.26 634	9.99 936	54 36
	28	7	8.73 536	232	8.73 600	234	1.26 400	9.99 935	53 32
	32	8	8.73 767	232	8.73 832	232	1.26 168	9.99 935	52 28
	36	9	8.73 997	230	8.74 063	231	1.25 937	9.99 934	51 24
				229		229			
12	40	10	8.74 226		8.74 292		1.25 708	9.99 934	50 47 20
	44	11	8.74 454	228	8.74 521	229	1.25 479	9.99 933	49 16
	48	12	8.74 680	226	8.74 748	227	1.25 252	9.99 932	48 12
	52	13	8.74 906	226	8.74 974	226	1.25 026	9.99 932	47 8
	56	14	8.75 130	224	8.75 199	225	1.24 801	9.99 931	46 4
				223		224			
13	0	15	8.75 353		8.75 423		1.24 577	9.99 930	45 47 0
	4	16	8.75 575	222	8.75 645	222	1.24 356	9.99 929	44 56
	8	17	8.75 796	220	8.75 867	222	1.24 133	9.99 929	43 52
	12	18	8.76 015	220	8.76 087	221	1.23 913	9.99 928	42 48
	16	19	8.76 234	219	8.76 306	219	1.23 694	9.99 927	41 44
				217		219			
13	20	20	8.76 451		8.76 525		1.23 475	9.99 926	40 46 40
	24	21	8.76 667	216	8.76 742	217	1.23 258	9.99 926	39 36
	28	22	8.76 883	216	8.76 958	216	1.23 042	9.99 925	38 32
	32	23	8.77 097	214	8.77 173	215	1.22 827	9.99 924	37 28
	36	24	8.77 310	213	8.77 387	214	1.22 613	9.99 923	36 24
				212		213			
13	40	25	8.77 522		8.77 600		1.22 400	9.99 923	35 46 20
	44	26	8.77 733	211	8.77 811	211	1.22 189	9.99 922	34 16
	48	27	8.77 943	210	8.78 022	211	1.21 978	9.99 921	33 12
	52	28	8.78 152	209	8.78 232	210	1.21 768	9.99 920	32 8
	56	29	8.78 360	208	8.78 441	209	1.21 559	9.99 920	31 4
				208		208			
14	0	30	8.78 568		8.78 649		1.21 351	9.99 919	30 46 0
	4	31	8.78 774	206	8.78 854	206	1.21 145	9.99 918	29 56
	8	32	8.78 979	205	8.79 061	206	1.20 939	9.99 917	28 52
	12	33	8.79 183	204	8.79 266	205	1.20 734	9.99 917	27 48
	16	34	8.79 386	203	8.79 470	204	1.20 530	9.99 916	26 44
				202		203			
14	20	35	8.79 588		8.79 673		1.20 327	9.99 915	25 46 40
	24	36	8.79 789	201	8.79 875	202	1.20 125	9.99 914	24 36
	28	37	8.79 990	201	8.80 076	201	1.19 924	9.99 913	23 32
	32	38	8.80 189	199	8.80 277	201	1.19 723	9.99 913	22 28
	36	39	8.80 388	199	8.80 476	199	1.19 524	9.99 912	21 24
				197		198			
14	40	40	8.80 585		8.80 674		1.19 326	9.99 911	20 46 20
	44	41	8.80 782	197	8.80 872	198	1.19 128	9.99 910	19 16
	48	42	8.80 978	196	8.81 068	196	1.18 932	9.99 909	18 12
	52	43	8.81 173	195	8.81 264	196	1.18 736	9.99 909	17 8
	56	44	8.81 367	194	8.81 459	195	1.18 541	9.99 908	16 4
				193		194			
15	0	45	8.81 560		8.81 653		1.18 347	9.99 907	15 46 0
	4	46	8.81 752	192	8.81 846	193	1.18 154	9.99 906	14 56
	8	47	8.81 944	192	8.82 038	192	1.17 962	9.99 906	13 52
	12	48	8.82 134	190	8.82 230	192	1.17 770	9.99 904	12 48
	16	49	8.82 324	190	8.82 420	190	1.17 580	9.99 904	11 44
				189		190			
15	20	50	8.82 513		8.82 610		1.17 390	9.99 903	10 44 40
	24	51	8.82 701	188	8.82 799	189	1.17 201	9.99 902	9 36
	28	52	8.82 888	187	8.82 987	188	1.17 013	9.99 901	8 32
	32	53	8.83 075	187	8.83 175	188	1.16 825	9.99 900	7 28
	36	54	8.83 261	186	8.83 361	186	1.16 639	9.99 899	6 24
				185		186			
15	40	55	8.83 446		8.83 547		1.16 453	9.99 898	5 44 20
	44	56	8.83 630	184	8.83 732	185	1.16 268	9.99 898	4 16
	48	57	8.83 813	183	8.83 916	184	1.16 084	9.99 897	3 12
	52	58	8.83 996	183	8.84 100	184	1.15 900	9.99 896	2 8
	56	59	8.84 177	181	8.84 282	182	1.15 718	9.99 895	1 4
				181		182			
16	0	60	8.84 358		8.84 464		1.15 536	9.99 894	0 44 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°				40°					
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.		
16	0	8.84 358	181	8.84 464	182	1.15 536	9.99 894	80	44 0
	4	8.84 539	179	8.84 648	180	1.15 354	9.99 893	59	56
	8	8.84 718	179	8.84 826	180	1.16 174	9.99 892	58	52
	12	8.84 897	178	8.85 006	179	1.14 994	9.99 891	57	48
	16	8.85 075	177	8.85 185	178	1.14 813	9.99 891	56	44
16	20	8.85 252	177	8.85 363	177	1.14 637	9.99 890	55	40
	24	8.85 429	176	8.85 540	177	1.14 460	9.99 889	54	36
	28	8.85 605	175	8.85 717	176	1.14 283	9.99 888	53	32
	32	8.85 780	175	8.85 893	176	1.14 107	9.99 887	52	28
	36	8.85 955	173	8.86 069	176	1.13 931	9.99 886	51	24
16	40	8.86 128	173	8.86 243	174	1.13 757	9.99 885	50	20
	44	8.86 301	173	8.86 417	174	1.13 583	9.99 884	49	16
	48	8.86 474	171	8.86 591	172	1.13 409	9.99 883	48	12
	52	8.86 645	171	8.86 763	172	1.13 237	9.99 882	47	8
	56	8.86 816	171	8.86 935	171	1.13 065	9.99 881	46	4
17	0	8.86 987	169	8.87 106	171	1.12 894	9.99 880	45	0
	4	8.87 156	169	8.87 277	170	1.12 723	9.99 879	44	56
	8	8.87 325	169	8.87 447	169	1.12 553	9.99 879	43	52
	12	8.87 494	167	8.87 616	169	1.12 384	9.99 878	42	48
	16	8.87 661	168	8.87 785	168	1.12 215	9.99 877	41	44
17	20	8.87 829	166	8.87 953	167	1.12 047	9.99 876	40	40
	24	8.87 995	166	8.88 120	167	1.11 880	9.99 875	39	36
	28	8.88 161	165	8.88 287	166	1.11 713	9.99 874	38	32
	32	8.88 326	164	8.88 453	165	1.11 547	9.99 873	37	28
	36	8.88 490	164	8.88 618	165	1.11 382	9.99 872	36	24
17	40	8.88 654	163	8.88 788	165	1.11 217	9.99 871	35	20
	44	8.88 817	163	8.88 948	163	1.11 052	9.99 870	34	16
	48	8.88 980	162	8.89 111	163	1.10 889	9.99 869	33	12
	52	8.89 142	162	8.89 374	163	1.10 726	9.99 868	32	8
	56	8.89 304	160	8.89 437	161	1.10 563	9.99 867	31	4
18	0	8.89 464	161	8.89 598	162	1.10 402	9.99 866	30	0
	4	8.89 625	159	8.89 760	160	1.10 240	9.99 865	29	56
	8	8.89 784	159	8.89 920	160	1.10 080	9.99 864	28	52
	12	8.89 943	159	8.90 080	160	1.09 920	9.99 863	27	48
	16	8.90 102	158	8.90 240	159	1.09 760	9.99 862	26	44
18	20	8.90 260	157	8.90 399	158	1.09 601	9.99 861	25	40
	24	8.90 417	157	8.90 557	158	1.09 443	9.99 860	24	36
	28	8.90 574	156	8.90 715	157	1.09 285	9.99 859	23	32
	32	8.90 730	155	8.90 872	157	1.09 128	9.99 858	22	28
	36	8.90 886	155	8.91 029	156	1.08 971	9.99 857	21	24
18	40	8.91 040	155	8.91 185	155	1.08 815	9.99 856	20	20
	44	8.91 195	154	8.91 340	155	1.08 660	9.99 855	19	16
	48	8.91 349	153	8.91 495	155	1.08 506	9.99 854	18	12
	52	8.91 502	153	8.91 650	155	1.08 350	9.99 853	17	8
	56	8.91 655	152	8.91 803	154	1.08 197	9.99 852	16	4
19	0	8.91 807	152	8.91 957	153	1.08 043	9.99 851	15	0
	4	8.91 959	151	8.92 110	152	1.07 890	9.99 850	14	56
	8	8.92 110	151	8.92 262	152	1.07 738	9.99 848	13	52
	12	8.92 261	150	8.92 414	151	1.07 586	9.99 847	12	48
	16	8.92 411	150	8.92 565	151	1.07 435	9.99 846	11	44
19	20	8.92 561	149	8.92 716	150	1.07 284	9.99 845	10	40
	24	8.92 710	149	8.92 866	150	1.07 134	9.99 844	9	36
	28	8.92 859	148	8.93 016	149	1.06 984	9.99 843	8	32
	32	8.93 007	147	8.93 165	148	1.06 835	9.99 842	7	28
	36	8.93 154	147	8.93 313	149	1.06 687	9.99 841	6	24
19	40	8.93 301	147	8.93 462	147	1.06 538	9.99 840	5	20
	44	8.93 448	146	8.93 609	147	1.06 391	9.99 839	4	16
	48	8.93 594	146	8.93 756	147	1.06 244	9.99 838	3	12
	52	8.93 740	145	8.93 903	146	1.06 097	9.99 837	2	8
	56	8.93 885	145	8.94 049	146	1.05 951	9.99 836	1	4
20	0	8.94 030		8.94 195		1.05 805	9.99 834	0	0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.		III. S.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			5°								
m.	n.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.			
20	0	0	8.94 080	144	8.94 196	145	1.05 805	9.99 824	40	0	0
	4	1	8.94 174	143	8.94 340	145	1.05 660	9.99 833	39	56	
	8	2	8.94 317	144	8.94 485	145	1.05 515	9.99 832	38	52	
	12	3	8.94 461	143	8.94 630	143	1.05 370	9.99 831	37	48	
	16	4	8.94 603	143	8.94 778	144	1.05 227	9.99 830	36	44	
20	20	5	8.94 746	141	8.94 917	143	1.05 083	9.99 829	55	40	
	24	6	8.94 887	142	8.95 060	142	1.04 940	9.99 828	54	36	
	28	7	8.95 029	141	8.95 202	142	1.04 798	9.99 827	53	32	
	32	8	8.95 170	140	8.95 344	142	1.04 656	9.99 826	52	28	
	36	9	8.95 310	140	8.95 486	141	1.04 514	9.99 824	51	24	
20	40	10	8.95 450	139	8.95 627	140	1.04 373	9.99 823	50	20	
	44	11	8.95 589	139	8.95 767	141	1.04 233	9.99 822	49	16	
	48	12	8.95 728	139	8.95 906	139	1.04 092	9.99 821	48	12	
	52	13	8.95 867	138	8.96 047	140	1.03 953	9.99 820	47	8	
	56	14	8.96 005	138	8.96 187	138	1.03 813	9.99 819	46	4	
21	0	15	8.96 143	137	8.96 325	139	1.03 675	9.99 817	45	0	
	4	16	8.96 280	137	8.96 464	138	1.03 536	9.99 816	44	56	
	8	17	8.96 417	136	8.96 602	137	1.03 398	9.99 815	43	52	
	12	18	8.96 553	136	8.96 739	138	1.03 261	9.99 814	42	48	
	16	19	8.96 689	136	8.96 877	136	1.03 123	9.99 813	41	44	
21	20	20	8.96 825	135	8.97 013	137	1.02 987	9.99 811	40	40	
	24	21	8.96 960	135	8.97 150	135	1.02 850	9.99 810	39	36	
	28	22	8.97 095	134	8.97 285	136	1.02 715	9.99 808	38	32	
	32	23	8.97 229	134	8.97 421	135	1.02 579	9.99 806	37	28	
	36	24	8.97 363	133	8.97 556	135	1.02 444	9.99 807	36	24	
21	40	25	8.97 496	133	8.97 691	134	1.02 309	9.99 806	35	20	
	44	26	8.97 629	133	8.97 825	134	1.02 175	9.99 804	34	16	
	48	27	8.97 762	132	8.97 959	133	1.02 041	9.99 803	33	12	
	52	28	8.97 894	132	8.98 092	133	1.01 908	9.99 802	32	8	
	56	29	8.98 026	131	8.98 225	133	1.01 775	9.99 801	31	4	
22	0	30	8.98 157	131	8.98 358	132	1.01 642	9.99 800	30	0	
	4	31	8.98 288	131	8.98 490	132	1.01 510	9.99 798	29	56	
	8	32	8.98 419	130	8.98 622	131	1.01 378	9.99 797	28	52	
	12	33	8.98 549	130	8.98 753	131	1.01 247	9.99 796	27	48	
	16	34	8.98 679	129	8.98 884	131	1.01 116	9.99 795	26	44	
22	20	35	8.98 808	129	8.99 015	130	1.00 985	9.99 793	25	40	
	24	36	8.98 937	129	8.99 145	130	1.00 855	9.99 792	24	36	
	28	37	8.99 066	128	8.99 275	130	1.00 725	9.99 791	23	32	
	32	38	8.99 194	128	8.99 405	129	1.00 595	9.99 790	22	28	
	36	39	8.99 322	128	8.99 534	128	1.00 466	9.99 788	21	24	
22	40	40	8.99 450	127	8.99 662	129	1.00 338	9.99 787	20	20	
	44	41	8.99 577	127	8.99 791	128	1.00 209	9.99 786	19	16	
	48	42	8.99 704	126	8.99 919	127	1.00 081	9.99 785	18	12	
	52	43	8.99 830	126	9.00 046	128	0.99 954	9.99 783	17	8	
	56	44	8.99 956	126	9.00 174	127	0.99 826	9.99 782	16	4	
23	0	45	9.00 082	125	9.00 301	126	0.99 698	9.99 781	15	0	
	4	46	9.00 207	125	9.00 427	126	0.99 573	9.99 780	14	56	
	8	47	9.00 332	124	9.00 553	126	0.99 447	9.99 778	13	52	
	12	48	9.00 456	125	9.00 679	126	0.99 321	9.99 777	12	48	
	16	49	9.00 581	123	9.00 805	125	0.99 195	9.99 776	11	44	
23	20	50	9.00 704	124	9.00 930	125	0.99 070	9.99 775	10	40	
	24	51	9.00 828	123	9.01 055	124	0.98 945	9.99 773	9	36	
	28	52	9.00 951	123	9.01 179	124	0.98 821	9.99 772	8	32	
	32	53	9.01 074	122	9.01 303	124	0.98 697	9.99 771	7	28	
	36	54	9.01 196	122	9.01 427	123	0.98 573	9.99 769	6	24	
23	40	55	9.01 318	122	9.01 550	123	0.98 450	9.99 768	5	20	
	44	56	9.01 440	121	9.01 673	123	0.98 327	9.99 767	4	16	
	48	57	9.01 561	121	9.01 796	122	0.98 204	9.99 765	3	12	
	52	58	9.01 682	121	9.01 918	122	0.98 082	9.99 764	2	8	
	56	59	9.01 803	120	9.02 040	122	0.97 960	9.99 763	1	4	
24	0	60	9.01 923		9.02 162		0.97 838	9.99 761	0	0	
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.		m.	n.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0 <sup>h</sup>				6 <sup>o</sup>					
m.	s.	'	L. Sin.	d.	L. Tang	c. d.	L. Cotg.	L. Cos.	
24	0	0	9.01 923	120	9.02 162	121	0.97 838	9.99 761	60 36 0
	4	1	9.02 043	120	9.02 283	121	0.97 717	9.99 760	59 56
	8	2	9.02 163	120	9.02 404	121	0.97 596	9.99 759	58 52
	12	3	9.02 283	119	9.02 525	120	0.97 475	9.99 757	57 48
	16	4	9.02 402	118	9.02 645	121	0.97 355	9.99 756	56 44
24	20	5	9.02 520	119	9.02 766	119	0.97 234	9.99 755	55 35 40
	24	6	9.02 639	118	9.02 885	120	0.97 115	9.99 753	54 36
	28	7	9.02 757	117	9.03 006	119	0.96 995	9.99 752	53 32
	32	8	9.02 874	118	9.03 124	118	0.96 876	9.99 751	52 28
	36	9	9.02 992	117	9.03 242	119	0.96 758	9.99 749	51 24
24	40	10	9.03 109	117	9.03 361	118	0.96 639	9.99 748	50 35 20
	44	11	9.03 226	116	9.03 479	118	0.96 521	9.99 747	49 16
	48	12	9.03 342	116	9.03 597	117	0.96 403	9.99 745	48 12
	52	13	9.03 458	116	9.03 714	118	0.96 286	9.99 744	47 8
	56	14	9.03 574	116	9.03 832	116	0.96 168	9.99 742	46 4
25	0	15	9.03 690	115	9.03 948	117	0.96 052	9.99 741	45 35 0
	4	16	9.03 805	115	9.04 065	116	0.95 935	9.99 740	44 56
	8	17	9.03 920	114	9.04 181	116	0.95 819	9.99 738	43 52
	12	18	9.04 034	115	9.04 297	116	0.95 703	9.99 737	42 48
	16	19	9.04 149	113	9.04 413	115	0.95 587	9.99 736	41 44
25	20	20	9.04 262	114	9.04 528	115	0.95 472	9.99 734	40 34 40
	24	21	9.04 376	114	9.04 643	115	0.95 357	9.99 733	39 36
	28	22	9.04 490	113	9.04 758	115	0.95 242	9.99 731	38 32
	32	23	9.04 603	112	9.04 873	114	0.95 127	9.99 730	37 28
	36	24	9.04 715	113	9.04 987	114	0.95 013	9.99 728	36 24
25	40	25	9.04 828	112	9.05 101	113	0.94 899	9.99 727	35 34 20
	44	26	9.04 940	112	9.05 214	114	0.94 786	9.99 726	34 16
	48	27	9.05 052	112	9.05 328	113	0.94 672	9.99 724	33 12
	52	28	9.05 164	111	9.05 441	112	0.94 559	9.99 723	32 8
	56	29	9.05 275	111	9.05 553	113	0.94 447	9.99 721	31 4
26	0	30	9.05 386	111	9.05 666	112	0.94 334	9.99 720	30 34 0
	4	31	9.05 497	110	9.05 778	112	0.94 222	9.99 718	29 56
	8	32	9.05 607	110	9.05 890	112	0.94 110	9.99 717	28 52
	12	33	9.05 717	110	9.06 002	111	0.93 998	9.99 716	27 48
	16	34	9.05 827	110	9.06 113	111	0.93 887	9.99 714	26 44
26	20	35	9.05 937	109	9.06 224	111	0.93 775	9.99 713	25 33 40
	24	36	9.06 046	109	9.06 335	110	0.93 665	9.99 711	24 36
	28	37	9.06 156	109	9.06 445	110	0.93 555	9.99 710	23 32
	32	38	9.06 264	108	9.06 556	110	0.93 444	9.99 708	22 28
	36	39	9.06 372	109	9.06 666	109	0.93 334	9.99 707	21 24
26	40	40	9.06 481	108	9.06 775	110	0.93 225	9.99 705	20 23 20
	44	41	9.06 589	107	9.06 885	109	0.93 115	9.99 704	19 16
	48	42	9.06 696	108	9.06 994	109	0.93 006	9.99 702	18 12
	52	43	9.06 804	107	9.07 103	108	0.92 897	9.99 701	17 8
	56	44	9.06 911	107	9.07 211	109	0.92 788	9.99 699	16 4
27	0	45	9.07 018	106	9.07 320	108	0.92 680	9.99 698	15 33 0
	4	46	9.07 124	107	9.07 428	108	0.92 572	9.99 696	14 56
	8	47	9.07 231	106	9.07 536	107	0.92 464	9.99 695	13 52
	12	48	9.07 337	106	9.07 643	107	0.92 357	9.99 693	12 48
	16	49	9.07 442	106	9.07 751	107	0.92 249	9.99 692	11 44
27	20	50	9.07 548	105	9.07 858	106	0.92 142	9.99 690	10 32 40
	24	51	9.07 653	105	9.07 964	107	0.92 036	9.99 689	9 36
	28	52	9.07 758	105	9.08 071	106	0.91 929	9.99 687	8 32
	32	53	9.07 863	105	9.08 177	106	0.91 823	9.99 686	7 28
	36	54	9.07 968	104	9.08 283	106	0.91 717	9.99 684	6 24
27	40	55	9.08 072	104	9.08 389	106	0.91 611	9.99 683	5 32 20
	44	56	9.08 176	104	9.08 495	105	0.91 506	9.99 681	4 16
	48	57	9.08 280	103	9.08 600	105	0.91 400	9.99 680	3 12
	52	58	9.08 383	103	9.08 705	105	0.91 295	9.99 678	2 8
	56	59	9.08 486	103	9.08 810	104	0.91 190	9.99 677	1 4
28	0	60	9.08 589		9.08 914		0.91 086	9.99 675	0 32 0
			L. Cos.	d.	L. Cotg	c. d.	L. Tang.	L. Sin	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		7°							
m	s.	L. Sin	d	L. Tang.	c. d	L. Cotg.	L. Cos.		
28	0	9.08 589	108	9.08 914	105	0.91 086	9.99 675	80	22 0
	1	9.08 692	108	9.09 019	104	0.90 981	9.99 674	59	56
	2	9.08 795	108	9.09 123	104	0.90 877	9.99 672	58	52
	3	9.08 897	102	9.09 227	104	0.90 773	9.99 670	57	48
	4	9.08 999	102	9.09 330	104	0.90 670	9.99 669	56	44
28	20	9.09 101	101	9.09 434	103	0.90 566	9.99 667	55	31 40
	24	9.09 202	102	9.09 537	103	0.90 463	9.99 666	54	36
	28	9.09 304	101	9.09 640	102	0.90 360	9.99 664	53	32
	32	9.09 405	101	9.09 742	101	0.90 258	9.99 663	52	28
	36	9.09 506	100	9.09 845	101	0.90 155	9.99 661	51	24
28	40	9.09 606	101	9.09 947	102	0.90 053	9.99 659	50	21 20
	44	9.09 707	100	9.10 049	101	0.89 951	9.99 658	49	16
	48	9.09 807	100	9.10 150	101	0.89 850	9.99 656	48	12
	52	9.09 907	99	9.10 252	101	0.89 748	9.99 655	47	8
	56	9.10 006	100	9.10 353	101	0.89 647	9.99 653	46	4
29	0	9.10 106	99	9.10 454	101	0.89 546	9.99 651	45	31 0
	4	9.10 205	99	9.10 555	101	0.89 445	9.99 650	44	56
	8	9.10 304	98	9.10 656	100	0.89 344	9.99 648	43	52
	12	9.10 403	99	9.10 756	100	0.89 244	9.99 647	42	48
	16	9.10 501	98	9.10 856	100	0.89 144	9.99 645	41	44
29	20	9.10 599	98	9.10 956	100	0.89 044	9.99 643	40	30 40
	24	9.10 697	98	9.11 056	99	0.88 944	9.99 642	39	36
	28	9.10 795	98	9.11 156	99	0.88 845	9.99 640	38	32
	32	9.10 893	97	9.11 254	99	0.88 746	9.99 638	37	28
	36	9.10 990	97	9.11 353	99	0.88 647	9.99 637	36	24
29	40	9.11 087	97	9.11 452	99	0.88 548	9.99 635	35	20 20
	44	9.11 184	97	9.11 551	98	0.88 449	9.99 633	34	16
	48	9.11 281	96	9.11 649	98	0.88 351	9.99 632	33	12
	52	9.11 377	97	9.11 747	98	0.88 253	9.99 630	32	8
	56	9.11 474	96	9.11 845	98	0.88 155	9.99 629	31	4
30	0	9.11 570	96	9.11 943	97	0.88 057	9.99 627	30	30 0
	4	9.11 666	96	9.12 040	98	0.87 960	9.99 625	29	56
	8	9.11 761	96	9.12 138	97	0.87 862	9.99 624	28	52
	12	9.11 857	95	9.12 235	97	0.87 765	9.99 622	27	48
	16	9.11 952	95	9.12 332	96	0.87 668	9.99 620	26	44
30	20	9.12 047	95	9.12 428	95	0.87 571	9.99 618	25	29 40
	24	9.12 142	94	9.12 525	94	0.87 475	9.99 617	24	36
	28	9.12 236	95	9.12 621	94	0.87 379	9.99 615	23	32
	32	9.12 331	94	9.12 717	94	0.87 283	9.99 613	22	28
	36	9.12 425	94	9.12 813	96	0.87 187	9.99 612	21	24
30	40	9.12 519	93	9.12 909	95	0.87 091	9.99 610	20	29 20
	44	9.12 612	94	9.13 004	95	0.86 996	9.99 608	19	16
	48	9.12 706	93	9.13 099	95	0.86 901	9.99 607	18	12
	52	9.12 799	93	9.13 194	95	0.86 806	9.99 605	17	8
	56	9.12 892	93	9.13 289	95	0.86 711	9.99 603	16	4
31	0	9.12 986	93	9.13 384	94	0.86 616	9.99 601	15	29 0
	4	9.13 078	93	9.13 478	95	0.86 522	9.99 600	14	56
	8	9.13 171	92	9.13 573	94	0.86 427	9.99 598	13	52
	12	9.13 263	92	9.13 667	94	0.86 333	9.99 596	12	48
	16	9.13 355	92	9.13 761	93	0.86 239	9.99 595	11	44
31	20	9.13 447	92	9.13 854	94	0.86 146	9.99 593	10	28 40
	24	9.13 539	91	9.13 948	93	0.86 052	9.99 591	9	36
	28	9.13 630	92	9.14 041	94	0.85 959	9.99 589	8	32
	32	9.13 722	91	9.14 134	93	0.85 866	9.99 588	7	28
	36	9.13 814	91	9.14 227	93	0.85 773	9.99 586	6	24
31	40	9.13 904	90	9.14 320	92	0.85 680	9.99 584	5	28 20
	44	9.13 994	91	9.14 412	92	0.85 588	9.99 582	4	16
	48	9.14 085	90	9.14 504	93	0.85 496	9.99 581	3	12
	52	9.14 175	91	9.14 597	91	0.85 403	9.99 579	2	8
	56	9.14 266	90	9.14 688	92	0.85 312	9.99 577	1	4
32	0	9.14 356		9.14 780		0.85 220	9.99 575	0	28 0
		L. Cos	d	L. Cotg	c. d	L. Tang	L. Sin		m s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			8°		
m.	s.	'	L. Sin.	d.	L. Tang.
32	0	0	9.14 356	89	9.14 780
	4	1	9.14 446	90	9.14 872
	8	2	9.14 536	90	9.14 963
	12	3	9.14 624	90	9.15 054
	16	4	9.14 714	89	9.15 145
32	20	6	9.14 803	88	9.15 236
	24	6	9.14 891	89	9.15 327
	28	7	9.14 980	89	9.15 417
	32	8	9.15 069	88	9.15 508
	36	9	9.15 157	88	9.15 598
32	40	10	9.15 246	88	9.15 688
	44	11	9.15 333	88	9.15 777
	48	12	9.15 421	87	9.15 867
	52	13	9.15 508	88	9.15 956
	56	14	9.15 596	87	9.16 046
33	0	15	9.15 683	87	9.16 135
	4	16	9.15 770	87	9.16 224
	8	17	9.15 857	88	9.16 312
	12	18	9.15 944	87	9.16 401
	16	19	9.16 030	86	9.16 489
33	20	20	9.16 116	86	9.16 577
	24	21	9.16 203	86	9.16 666
	28	22	9.16 289	85	9.16 753
	32	23	9.16 374	86	9.16 841
	36	24	9.16 460	85	9.16 928
33	40	25	9.16 546	86	9.17 016
	44	26	9.16 631	85	9.17 103
	48	27	9.16 716	85	9.17 190
	52	28	9.16 801	85	9.17 277
	56	29	9.16 886	84	9.17 363
34	0	30	9.16 970	85	9.17 450
	4	31	9.17 055	84	9.17 536
	8	32	9.17 139	84	9.17 622
	12	33	9.17 223	84	9.17 708
	16	34	9.17 307	84	9.17 794
34	20	35	9.17 391	83	9.17 880
	24	36	9.17 474	84	9.17 965
	28	37	9.17 558	83	9.18 051
	32	38	9.17 641	83	9.18 136
	36	39	9.17 724	83	9.18 221
34	40	40	9.17 807	83	9.18 306
	44	41	9.17 890	83	9.18 391
	48	42	9.17 973	82	9.18 475
	52	43	9.18 056	82	9.18 560
	56	44	9.18 137	83	9.18 644
35	0	45	9.18 220	82	9.18 728
	4	46	9.18 302	81	9.18 812
	8	47	9.18 383	82	9.18 896
	12	48	9.18 465	82	9.18 979
	16	49	9.18 547	81	9.19 063
35	20	50	9.18 628	81	9.19 146
	24	51	9.18 709	81	9.19 229
	28	52	9.18 790	81	9.19 312
	32	53	9.18 871	81	9.19 395
	36	54	9.18 952	81	9.19 478
35	40	55	9.19 033	80	9.19 561
	44	56	9.19 113	80	9.19 643
	48	57	9.19 193	80	9.19 725
	52	58	9.19 273	80	9.19 807
	56	59	9.19 353	80	9.19 889
36	0	60	9.19 433	80	9.19 971
			L. Cos.	d.	L. Cotg.
					c d
					L. Tang.
					L. Sin.
					'
					ln. n

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		90°								
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.		
36	0	0	9.19 483		9.19 971		0.80 029	9.99 462	60	24 0
	4	1	9.19 513	80	9.20 058	82	0.79 947	9.99 460	59	24 36
	8	2	9.19 542	79	9.20 134	81	0.79 866	9.99 458	58	24 72
	12	3	9.19 572	80	9.20 216	82	0.79 784	9.99 456	57	25 08
	16	4	9.19 751	79	9.20 297	81	0.79 703	9.99 454	56	25 44
36	20	5	9.19 830	79	9.20 378	81	0.79 622	9.99 452	55	25 80
	24	6	9.19 909	79	9.20 459	81	0.79 541	9.99 450	54	26 16
	28	7	9.19 988	79	9.20 540	81	0.79 460	9.99 448	53	26 52
	32	8	9.20 067	78	9.20 621	80	0.79 379	9.99 446	52	26 88
	36	9	9.20 145	78	9.20 701	81	0.79 299	9.99 444	51	27 24
36	40	10	9.20 228	79	9.20 782	80	0.79 218	9.99 442	50	27 60
	44	11	9.20 302	78	9.20 862	80	0.79 138	9.99 440	49	27 96
	48	12	9.20 380	78	9.20 942	80	0.79 058	9.99 438	48	28 32
	52	13	9.20 456	78	9.21 022	80	0.78 978	9.99 436	47	28 68
	56	14	9.20 535	78	9.21 102	80	0.78 898	9.99 434	46	29 04
37	0	15	9.20 613	78	9.21 182	79	0.78 818	9.99 432	45	29 40
	4	16	9.20 691	77	9.21 261	80	0.78 739	9.99 429	44	29 76
	8	17	9.20 768	77	9.21 341	79	0.78 659	9.99 427	43	30 12
	12	18	9.20 845	77	9.21 420	79	0.78 580	9.99 425	42	30 48
	16	19	9.20 922	77	9.21 499	79	0.78 501	9.99 423	41	30 84
37	20	20	9.20 999	77	9.21 578	79	0.78 422	9.99 421	40	31 20
	24	21	9.21 076	77	9.21 657	79	0.78 343	9.99 419	39	31 56
	28	22	9.21 153	76	9.21 736	78	0.78 264	9.99 417	38	31 92
	32	23	9.21 229	76	9.21 814	79	0.78 186	9.99 415	37	32 28
	36	24	9.21 306	76	9.21 893	78	0.78 107	9.99 413	36	32 64
37	40	25	9.21 382	76	9.21 971	78	0.78 029	9.99 411	35	33 00
	44	26	9.21 458	76	9.22 049	78	0.77 951	9.99 409	34	33 36
	48	27	9.21 534	76	9.22 127	78	0.77 873	9.99 407	33	33 72
	52	28	9.21 610	75	9.22 206	78	0.77 795	9.99 404	32	34 08
	56	29	9.21 686	76	9.22 283	78	0.77 717	9.99 402	31	34 44
38	0	30	9.21 761	76	9.22 361	77	0.77 639	9.99 400	30	34 80
	4	31	9.21 836	76	9.22 438	78	0.77 562	9.99 398	29	35 16
	8	32	9.21 912	76	9.22 516	77	0.77 484	9.99 396	28	35 52
	12	33	9.21 987	75	9.22 593	77	0.77 407	9.99 394	27	35 88
	16	34	9.22 062	75	9.22 670	77	0.77 330	9.99 392	26	36 24
38	20	35	9.22 137	74	9.22 747	77	0.77 253	9.99 390	25	36 60
	24	36	9.22 211	75	9.22 824	77	0.77 176	9.99 388	24	36 96
	28	37	9.22 286	75	9.22 901	76	0.77 099	9.99 386	23	37 32
	32	38	9.22 361	74	9.22 977	77	0.77 023	9.99 383	22	37 68
	36	39	9.22 435	74	9.23 054	76	0.76 946	9.99 381	21	38 04
38	40	40	9.22 509	74	9.23 130	76	0.76 870	9.99 379	20	38 40
	44	41	9.22 583	74	9.23 206	77	0.76 794	9.99 377	19	38 76
	48	42	9.22 657	74	9.23 283	76	0.76 717	9.99 375	18	39 12
	52	43	9.22 731	74	9.23 359	76	0.76 641	9.99 372	17	39 48
	56	44	9.22 805	73	9.23 435	75	0.76 565	9.99 370	16	39 84
39	0	45	9.22 878	74	9.23 510	76	0.76 490	9.99 368	15	40 20
	4	46	9.22 952	73	9.23 586	75	0.76 414	9.99 366	14	40 56
	8	47	9.23 025	73	9.23 661	76	0.76 339	9.99 364	13	40 92
	12	48	9.23 098	73	9.23 737	75	0.76 263	9.99 362	12	41 28
	16	49	9.23 171	73	9.23 812	75	0.76 188	9.99 359	11	41 64
39	20	50	9.23 244	73	9.23 887	75	0.76 113	9.99 357	10	42 00
	24	51	9.23 317	73	9.23 962	75	0.76 038	9.99 355	9	42 36
	28	52	9.23 390	72	9.24 037	75	0.76 963	9.99 353	8	42 72
	32	53	9.23 462	73	9.24 112	74	0.76 888	9.99 351	7	43 08
	36	54	9.23 535	72	9.24 186	74	0.76 814	9.99 348	6	43 44
39	40	55	9.23 607	72	9.24 261	74	0.76 739	9.99 346	5	43 80
	44	56	9.23 679	73	9.24 335	75	0.76 665	9.99 344	4	44 16
	48	57	9.23 752	71	9.24 410	74	0.76 590	9.99 342	3	44 52
	52	58	9.23 823	72	9.24 484	74	0.76 516	9.99 340	2	44 88
	56	59	9.23 895	72	9.24 558	74	0.76 442	9.99 337	1	45 24
40	0	60	9.23 967		9.24 632		0.76 368	9.99 335	0	45 60
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			10°		
m.	s.		L. Sin.	d.	L. Tang
40	0	0	9.23 967		9.24 432
	4	1	9.24 099	72	9.24 706
	8	2	9.24 110	71	9.24 779
	12	3	9.24 181	71	9.24 853
	16	4	9.24 253	72	9.24 926
				71	
40	20	5	9.24 324		9.25 000
	24	6	9.24 395	71	9.25 073
	28	7	9.24 466	71	9.25 146
	32	8	9.24 536	70	9.25 219
	36	9	9.24 607	71	9.25 292
				70	
40	40	10	9.24 677		9.25 365
	44	11	9.24 748	71	9.25 437
	48	12	9.24 818	70	9.25 510
	52	13	9.24 888	70	9.25 582
	56	14	9.24 958	70	9.25 655
				70	
41	0	15	9.25 028		9.25 727
	4	16	9.25 098	70	9.25 799
	8	17	9.25 168	70	9.25 871
	12	18	9.25 237	69	9.25 943
	16	19	9.25 307	70	9.26 015
				69	
41	20	20	9.25 376		9.26 086
	24	21	9.25 445	69	9.26 158
	28	22	9.25 514	69	9.26 229
	32	23	9.25 583	69	9.26 301
	36	24	9.25 652	69	9.26 372
				69	
41	40	25	9.25 721		9.26 443
	44	26	9.25 790	69	9.26 514
	48	27	9.25 858	68	9.26 585
	52	28	9.25 927	69	9.26 656
	56	29	9.25 995	68	9.26 726
				68	
42	0	30	9.26 063		9.26 797
	4	31	9.26 131	68	9.26 867
	8	32	9.26 199	68	9.26 937
	12	33	9.26 267	68	9.27 008
	16	34	9.26 335	68	9.27 078
				68	
42	20	35	9.26 403		9.27 148
	24	36	9.26 470	67	9.27 218
	28	37	9.26 539	68	9.27 288
	32	38	9.26 606	67	9.27 357
	36	39	9.26 672	67	9.27 427
				67	
42	40	40	9.26 739		9.27 496
	44	41	9.26 806	67	9.27 566
	48	42	9.26 873	67	9.27 635
	52	43	9.26 940	67	9.27 704
	56	44	9.27 007	67	9.27 773
				66	
43	0	45	9.27 073		9.27 842
	4	46	9.27 140	67	9.27 911
	8	47	9.27 206	66	9.27 980
	12	48	9.27 273	67	9.28 049
	16	49	9.27 339	66	9.28 117
				66	
43	20	50	9.27 405		9.28 186
	24	51	9.27 471	66	9.28 254
	28	52	9.27 537	66	9.28 323
	32	53	9.27 602	65	9.28 391
	36	54	9.27 668	66	9.28 459
				66	
43	40	55	9.27 734		9.28 527
	44	56	9.27 799	65	9.28 595
	48	57	9.27 864	65	9.28 662
	52	58	9.27 930	65	9.28 730
	56	59	9.27 995	65	9.28 798
				65	
44	0	60	9.28 060		9.28 865
			L. Cos.	d.	L. Cotg
					c. d.
					L. Tang
					L. Sin.
					d.
					m.
					s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			11°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
44	0	0	9.28 060		9.28 865		0.71 135	9.99 195		60	16 0
	4	1	9.28 125	65	9.28 933	68	0.71 067	9.99 192	3	59	66
	8	2	9.28 190	65	9.29 000	67	0.71 000	9.99 190	2	58	62
	12	3	9.28 254	64	9.29 067	67	0.70 933	9.99 187	3	57	48
	16	4	9.28 319	65	9.29 134	67	0.70 866	9.99 185	2	56	44
				65		67			3		
44	20	5	9.28 384		9.29 201		0.70 799	9.99 182		55	15 40
	24	6	9.28 448	64	9.29 268	67	0.70 732	9.99 180	2	54	36
	28	7	9.28 512	64	9.29 335	67	0.70 665	9.99 177	3	53	32
	32	8	9.28 577	65	9.29 402	67	0.70 598	9.99 175	2	52	28
	36	9	9.28 641	64	9.29 468	66	0.70 532	9.99 172	3	51	24
				64		67			2		
44	40	10	9.28 705		9.29 535		0.70 465	9.99 170		50	15 20
	44	11	9.28 769	64	9.29 601	66	0.70 399	9.99 167	3	49	16
	48	12	9.28 833	64	9.29 668	67	0.70 332	9.99 165	2	48	12
	52	13	9.28 896	63	9.29 734	66	0.70 266	9.99 162	3	47	8
	56	14	9.28 960	64	9.29 800	66	0.70 200	9.99 160	2	46	4
				64		66			3		
45	0	15	9.29 024		9.29 866		0.70 134	9.99 157		45	15 0
	4	16	9.29 087	63	9.29 932	66	0.70 068	9.99 155	2	44	56
	8	17	9.29 150	63	9.29 998	66	0.70 002	9.99 152	3	43	52
	12	18	9.29 214	64	9.30 064	66	0.69 936	9.99 150	2	42	48
	16	19	9.29 277	63	9.30 130	66	0.69 870	9.99 147	3	41	44
				63		65			2		
45	20	20	9.29 340		9.30 195		0.69 805	9.99 145		40	14 40
	24	21	9.29 403	63	9.30 261	66	0.69 739	9.99 142	3	39	36
	28	22	9.29 466	63	9.30 326	65	0.69 674	9.99 140	2	38	32
	32	23	9.29 529	63	9.30 391	65	0.69 609	9.99 137	3	37	28
	36	24	9.29 591	62	9.30 457	66	0.69 543	9.99 135	2	36	24
				63		65			3		
45	40	25	9.29 654		9.30 522		0.69 478	9.99 132		35	14 20
	44	26	9.29 716	62	9.30 587	65	0.69 413	9.99 130	2	34	16
	48	27	9.29 779	63	9.30 652	65	0.69 348	9.99 127	3	33	12
	52	28	9.29 841	62	9.30 717	65	0.69 283	9.99 124	3	32	8
	56	29	9.29 903	62	9.30 782	65	0.69 218	9.99 122	2	31	4
				63		64			3		
45	0	30	9.29 966		9.30 846		0.69 154	9.99 119		30	14 0
	4	31	9.30 028	62	9.30 911	65	0.69 089	9.99 117	2	29	56
	8	32	9.30 090	62	9.30 976	64	0.69 025	9.99 114	3	28	52
	12	33	9.30 151	61	9.31 040	65	0.68 960	9.99 112	2	27	48
	16	34	9.30 213	62	9.31 104	64	0.68 896	9.99 109	3	26	44
				62		64			3		
45	20	35	9.30 275		9.31 168		0.68 832	9.99 106		25	13 40
	24	36	9.30 338	61	9.31 233	64	0.68 767	9.99 104	2	24	36
	28	37	9.30 398	62	9.31 297	64	0.68 703	9.99 101	3	23	32
	32	38	9.30 459	61	9.31 361	64	0.68 639	9.99 099	2	22	28
	36	39	9.30 521	62	9.31 425	64	0.68 575	9.99 096	3	21	24
				61		64			3		
45	40	40	9.30 582		9.31 489		0.68 511	9.99 093		20	13 20
	44	41	9.30 643	61	9.31 552	63	0.68 448	9.99 091	2	19	16
	48	42	9.30 704	61	9.31 616	61	0.68 384	9.99 088	3	18	12
	52	43	9.30 765	61	9.31 679	63	0.68 321	9.99 086	2	17	8
	56	44	9.30 826	61	9.31 743	61	0.68 257	9.99 083	3	16	4
				61		61			3		
47	0	45	9.30 887		9.31 806		0.68 194	9.99 080		15	13 0
	4	46	9.30 947	60	9.31 870	64	0.68 130	9.99 078	2	14	56
	8	47	9.31 008	61	9.31 935	63	0.68 067	9.99 075	3	13	52
	12	48	9.31 068	60	9.31 996	63	0.68 004	9.99 072	3	12	48
	16	49	9.31 129	61	9.32 059	63	0.67 941	9.99 070	2	11	44
				60		63			3		
47	20	50	9.31 189		9.32 120		0.67 878	9.99 067		10	12 40
	24	51	9.31 250	61	9.32 185	63	0.67 815	9.99 064	3	9	36
	28	52	9.31 310	60	9.32 248	63	0.67 752	9.99 062	2	8	32
	32	53	9.31 370	60	9.32 311	63	0.67 689	9.99 059	3	7	28
	36	54	9.31 430	60	9.32 373	62	0.67 627	9.99 056	3	6	24
				60		63			2		
47	40	55	9.31 490		9.32 436		0.67 564	9.99 054		5	12 20
	44	56	9.31 549	59	9.32 498	62	0.67 502	9.99 051	3	4	16
	48	57	9.31 609	60	9.32 561	61	0.67 439	9.99 048	3	3	12
	52	58	9.31 669	60	9.32 623	62	0.67 377	9.99 046	2	2	8
	56	59	9.31 728	59	9.32 685	62	0.67 315	9.99 043	3	1	4
				60		62			3		
48	0	60	9.31 788		9.32 747		0.67 253	9.99 040		0	12 0
			L. Cos	1	L. Cotg	c. d.	L. Tang	L. Sin	d.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			12°									
m.	sec.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		m.	sec.
48	0	8	9.31 788	59	9.32 747	63	0.67 258	9.99 040	3	40	12	0
	4	1	9.31 847	60	9.32 810	62	0.67 190	9.99 038	3	59		56
	8	2	9.31 907	59	9.32 872	61	0.67 128	9.99 035	3	58		52
	12	3	9.31 966	59	9.32 933	62	0.67 067	9.99 032	3	57		48
	16	4	9.32 025	59	9.32 995	62	0.67 006	9.99 030	3	56		44
48	20	5	9.32 084	59	9.33 057	62	0.66 943	9.99 027	3	55	11	40
	24	6	9.32 143	59	9.33 119	61	0.66 881	9.99 024	3	54		36
	28	7	9.32 202	59	9.33 180	62	0.66 820	9.99 022	3	53		32
	32	8	9.32 261	58	9.33 242	61	0.66 758	9.99 019	3	52		28
	36	9	9.32 319	58	9.33 303	61	0.66 697	9.99 016	3	51		24
				59		62			3			
48	40	10	9.32 378	59	9.33 365	61	0.66 635	9.99 013	2	50	11	20
	44	11	9.32 437	58	9.33 426	61	0.66 574	9.99 011	3	49		16
	48	12	9.32 496	58	9.33 487	61	0.66 513	9.99 008	3	48		12
	52	13	9.32 553	59	9.33 548	61	0.66 452	9.99 005	3	47		8
	56	14	9.32 612	58	9.33 609	61	0.66 391	9.99 002	2	46		4
49	0	15	9.32 670	58	9.33 670	61	0.66 330	9.99 000	3	45	11	0
	4	16	9.32 728	58	9.33 731	61	0.66 269	9.98 997	3	44		56
	8	17	9.32 786	58	9.33 792	61	0.66 208	9.98 994	3	43		52
	12	18	9.32 844	58	9.33 853	60	0.66 147	9.98 991	3	42		48
	16	19	9.32 902	58	9.33 913	61	0.66 087	9.98 989	2	41		44
				58		61			3			
49	20	20	9.32 960	58	9.33 974	60	0.66 026	9.98 986	3	40	10	40
	24	21	9.33 018	57	9.34 034	61	0.65 966	9.98 983	3	39		36
	28	22	9.33 075	58	9.34 095	60	0.65 905	9.98 980	3	38		32
	32	23	9.33 133	57	9.34 155	60	0.65 845	9.98 978	2	37		28
	36	24	9.33 190	58	9.34 215	61	0.65 785	9.98 975	3	36		24
				57		61			3			
49	40	25	9.33 248	57	9.34 276	60	0.65 724	9.98 972	3	35	10	20
	44	26	9.33 306	57	9.34 336	60	0.65 664	9.98 969	2	34		16
	48	27	9.33 362	58	9.34 396	60	0.65 604	9.98 967	3	33		12
	52	28	9.33 420	57	9.34 456	60	0.65 544	9.98 964	3	32		8
	56	29	9.33 477	57	9.34 516	60	0.65 484	9.98 961	3	31		4
				57		60			3			
50	0	30	9.33 534	57	9.34 576	59	0.65 424	9.98 958	3	30	10	0
	4	31	9.33 591	56	9.34 635	59	0.65 365	9.98 955	2	29		56
	8	32	9.33 647	57	9.34 695	60	0.65 305	9.98 953	3	28		52
	12	33	9.33 704	57	9.34 755	59	0.65 245	9.98 950	3	27		48
	16	34	9.33 761	57	9.34 814	60	0.65 186	9.98 947	3	26		44
				57		60			3			
50	20	35	9.33 818	56	9.34 874	59	0.65 126	9.98 944	3	25	9	40
	24	36	9.33 874	57	9.34 933	59	0.65 067	9.98 941	3	24		36
	28	37	9.33 931	56	9.34 992	59	0.65 008	9.98 938	2	23		32
	32	38	9.33 987	56	9.35 051	60	0.64 949	9.98 936	3	22		28
	36	39	9.34 043	57	9.35 111	59	0.64 889	9.98 933	3	21		24
				57		59			3			
50	40	40	9.34 100	56	9.35 170	59	0.64 830	9.98 930	3	20	9	20
	44	41	9.34 156	56	9.35 229	59	0.64 771	9.98 927	3	19		16
	48	42	9.34 212	56	9.35 288	59	0.64 712	9.98 924	3	18		12
	52	43	9.34 268	56	9.35 347	58	0.64 653	9.98 921	2	17		8
	56	44	9.34 324	56	9.35 406	59	0.64 595	9.98 919	3	16		4
				56		59			3			
51	0	45	9.34 380	56	9.35 464	58	0.64 536	9.98 916	3	15	9	0
	4	46	9.34 436	55	9.35 523	58	0.64 477	9.98 913	3	14		56
	8	47	9.34 491	56	9.35 581	59	0.64 419	9.98 910	3	13		52
	12	48	9.34 547	55	9.35 640	55	0.64 360	9.98 907	3	12		48
	16	49	9.34 602	56	9.35 698	59	0.64 302	9.98 904	3	11		44
				56		59			3			
51	20	50	9.34 658	56	9.35 757	58	0.64 243	9.98 901	3	10	8	40
	24	51	9.34 713	56	9.35 815	58	0.64 185	9.98 898	2	9		36
	28	52	9.34 769	66	9.35 873	58	0.64 127	9.98 896	3	8		32
	32	53	9.34 824	55	9.35 931	58	0.64 069	9.98 893	3	7		28
	36	54	9.34 879	55	9.35 989	58	0.64 011	9.98 890	3	6		24
				55		58			3			
51	40	55	9.34 934	55	9.36 047	58	0.63 953	9.98 887	3	5	8	20
	44	56	9.34 989	56	9.36 105	58	0.63 895	9.98 884	3	4		16
	48	57	9.35 044	56	9.36 163	58	0.63 837	9.98 881	3	3		12
	52	58	9.35 099	55	9.36 221	58	0.63 779	9.98 878	3	2		8
	56	59	9.35 154	55	9.36 279	57	0.63 721	9.98 875	3	1		4
				55		57			3			
52	0	60	9.35 209		9.36 336		0.63 664	9.98 872		0	8	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m.	sec.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°		13°									
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
32	0	0	9.35 200	54	9.36 336	58	0.63 664	9.98 872	3	68	5 0
	4	1	9.35 203	55	9.36 339	58	0.63 665	9.98 869	3	59	55
	8	2	9.35 206	55	9.36 342	57	0.63 648	9.98 867	3	58	52
	12	3	9.35 209	54	9.36 345	57	0.63 491	9.98 864	3	57	48
	16	4	9.35 212	54	9.36 348	58	0.63 434	9.98 861	3	56	44
32	20	5	9.35 215	55	9.36 351	57	0.63 376	9.98 858	3	55	40
	24	6	9.35 218	54	9.36 354	57	0.63 319	9.98 855	3	54	36
	28	7	9.35 221	54	9.36 357	57	0.63 262	9.98 852	3	53	32
	32	8	9.35 224	54	9.36 360	57	0.63 205	9.98 849	3	52	28
	36	9	9.35 227	54	9.36 363	57	0.63 148	9.98 846	3	51	24
32	40	10	9.35 230	54	9.36 366	57	0.63 091	9.98 843	3	50	20
	44	11	9.35 233	54	9.36 369	57	0.63 034	9.98 840	3	49	16
	48	12	9.35 236	54	9.37 023	57	0.62 977	9.98 837	3	48	12
	52	13	9.35 239	54	9.37 026	57	0.62 920	9.98 834	3	47	8
	56	14	9.35 242	54	9.37 029	56	0.62 863	9.98 831	3	46	4
33	0	15	9.35 245	53	9.37 032	57	0.62 807	9.98 828	3	45	0
	4	16	9.35 248	54	9.37 035	56	0.62 750	9.98 825	3	44	56
	8	17	9.35 251	53	9.37 038	57	0.62 694	9.98 822	3	43	52
	12	18	9.35 254	54	9.37 041	56	0.62 637	9.98 819	3	42	48
	16	19	9.35 257	53	9.37 044	57	0.62 581	9.98 816	3	41	44
33	20	20	9.35 260	53	9.37 047	56	0.62 524	9.98 813	3	40	40
	24	21	9.35 263	53	9.37 050	56	0.62 468	9.98 810	3	39	36
	28	22	9.35 266	54	9.37 053	56	0.62 412	9.98 807	3	38	32
	32	23	9.35 269	53	9.37 056	56	0.62 356	9.98 804	3	37	28
	36	24	9.35 272	53	9.37 059	56	0.62 300	9.98 801	3	36	24
33	40	25	9.35 275	53	9.37 062	56	0.62 244	9.98 798	3	35	20
	44	26	9.35 278	52	9.37 065	56	0.62 188	9.98 795	3	34	16
	48	27	9.35 281	53	9.37 068	56	0.62 132	9.98 792	3	33	12
	52	28	9.35 284	53	9.37 071	56	0.62 076	9.98 789	3	32	8
	56	29	9.35 287	53	9.37 074	55	0.62 020	9.98 786	3	31	4
34	0	30	9.35 290	52	9.38 066	56	0.61 965	9.98 783	3	30	0
	4	31	9.35 293	53	9.38 069	56	0.61 909	9.98 780	3	29	56
	8	32	9.35 296	52	9.38 072	55	0.61 853	9.98 777	3	28	52
	12	33	9.35 299	52	9.38 075	55	0.61 798	9.98 774	3	27	48
	16	34	9.35 302	53	9.38 078	56	0.61 743	9.98 771	3	26	44
34	20	35	9.35 305	52	9.38 081	55	0.61 687	9.98 768	3	25	40
	24	36	9.35 308	52	9.38 084	55	0.61 632	9.98 765	3	24	36
	28	37	9.35 311	52	9.38 087	56	0.61 577	9.98 762	3	23	32
	32	38	9.35 314	52	9.38 090	55	0.61 521	9.98 759	3	22	28
	36	39	9.35 317	52	9.38 093	55	0.61 466	9.98 756	3	21	24
34	40	40	9.35 320	52	9.38 096	55	0.61 411	9.98 753	3	20	20
	44	41	9.35 323	52	9.38 099	55	0.61 356	9.98 750	3	19	16
	48	42	9.35 326	52	9.38 102	55	0.61 301	9.98 747	3	18	12
	52	43	9.35 329	52	9.38 105	54	0.61 246	9.98 744	3	17	8
	56	44	9.35 332	51	9.38 108	55	0.61 192	9.98 741	3	16	4
35	0	45	9.35 335	52	9.38 111	55	0.61 137	9.98 737	3	15	0
	4	46	9.35 338	51	9.38 114	54	0.61 082	9.98 734	3	14	56
	8	47	9.35 341	52	9.38 117	55	0.61 028	9.98 731	3	13	52
	12	48	9.35 344	51	9.38 120	55	0.60 973	9.98 728	3	12	48
	16	49	9.35 347	52	9.38 123	54	0.60 918	9.98 725	3	11	44
35	20	50	9.35 350	51	9.39 126	54	0.60 864	9.98 722	3	10	40
	24	51	9.35 353	51	9.39 129	55	0.60 810	9.98 719	3	9	36
	28	52	9.35 356	51	9.39 132	54	0.60 755	9.98 716	3	8	32
	32	53	9.35 359	51	9.39 135	54	0.60 701	9.98 713	3	7	28
	36	54	9.35 362	51	9.39 138	54	0.60 647	9.98 709	3	6	24
35	40	55	9.35 365	51	9.39 141	54	0.60 593	9.98 706	3	5	20
	44	56	9.35 368	51	9.39 144	54	0.60 539	9.98 703	3	4	16
	48	57	9.35 371	51	9.39 147	54	0.60 485	9.98 700	3	3	12
	52	58	9.35 374	51	9.39 150	54	0.60 431	9.98 697	3	2	8
	56	59	9.35 377	51	9.39 153	54	0.60 377	9.98 694	3	1	4
36	0	60	9.35 380		9.39 156		0.60 323	9.98 690	4	0	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

0°			14°								
m.	n.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
56	0	0	9.38 368		9.39 677		0.60 323	9.98 690		60	4 0
	4	1	9.38 418	50	9.39 731	54	0.60 269	9.98 687	3	59	56
	8	2	9.38 469	51	9.39 785	54	0.60 215	9.98 684	3	58	52
	12	3	9.38 519	50	9.39 838	53	0.60 162	9.98 681	3	57	48
	16	4	9.38 570	51	9.39 892	54	0.60 108	9.98 678	3	56	44
				50		53			3		
56	20	5	9.38 620		9.39 945		0.60 055	9.98 675		55	3 40
	24	6	9.38 670	50	9.39 999	54	0.60 001	9.98 671	4	54	36
	28	7	9.38 721	51	9.40 052	53	0.59 948	9.98 668	3	53	32
	32	8	9.38 771	50	9.40 106	54	0.59 894	9.98 665	3	52	28
	36	9	9.38 821	50	9.40 159	53	0.59 841	9.98 662	3	51	24
				50		53			3		
56	40	10	9.38 871		9.40 212		0.59 788	9.98 659		50	3 20
	44	11	9.38 921	50	9.40 266	54	0.59 734	9.98 656	3	49	16
	48	12	9.38 971	50	9.40 319	53	0.59 681	9.98 652	4	48	12
	52	13	9.39 021	50	9.40 372	53	0.59 628	9.98 649	3	47	8
	56	14	9.39 071	50	9.40 425	53	0.59 575	9.98 646	3	46	4
				50		53			3		
57	0	15	9.39 121		9.40 478		0.59 522	9.98 643		45	3 0
	4	16	9.39 170	49	9.40 531	53	0.59 469	9.98 640	3	44	56
	8	17	9.39 220	50	9.40 584	53	0.59 416	9.98 636	4	43	52
	12	18	9.39 270	50	9.40 636	52	0.59 364	9.98 633	3	42	48
	16	19	9.39 319	49	9.40 689	53	0.59 311	9.98 630	3	41	44
				50		53			3		
57	20	20	9.39 369		9.40 742		0.59 258	9.98 627		40	2 40
	24	21	9.39 418	49	9.40 795	53	0.59 205	9.98 623	4	39	36
	28	22	9.39 467	49	9.40 847	52	0.59 153	9.98 620	3	■	32
	32	23	9.39 517	50	9.40 900	53	0.59 100	9.98 617	3	37	28
	36	24	9.39 566	49	9.40 952	52	0.59 048	9.98 614	3	■	24
				49		53			4		
57	40	25	9.39 615		9.41 005		0.58 995	9.98 610		35	2 20
	44	26	9.39 664	49	9.41 057	52	0.58 943	9.98 607	3	34	16
	48	27	9.39 713	49	9.41 109	52	0.58 891	9.98 604	3	33	12
	52	28	9.39 762	49	9.41 161	52	0.58 839	9.98 601	3	32	8
	56	29	9.39 811	49	9.41 214	53	0.58 786	9.98 597	4	31	4
				49		52			3		
58	0	30	9.39 860		9.41 266		0.58 734	9.98 594		30	2 0
	4	31	9.39 909	49	9.41 318	52	0.58 682	9.98 591	3	29	56
	8	32	9.39 958	49	9.41 370	52	0.58 630	9.98 588	3	28	52
	12	33	9.40 006	48	9.41 422	52	0.58 578	9.98 584	4	27	48
	16	34	9.40 055	49	9.41 474	52	0.58 526	9.98 581	3	26	44
				48		52			3		
58	20	35	9.40 103		9.41 526		0.58 474	9.98 578		25	1 40
	24	36	9.40 152	49	9.41 578	52	0.58 422	9.98 574	4	24	36
	28	37	9.40 200	48	9.41 629	51	0.58 371	9.98 571	3	23	32
	32	38	9.40 249	49	9.41 681	52	0.58 319	9.98 568	3	22	28
	36	39	9.40 297	48	9.41 733	52	0.58 267	9.98 565	3	21	24
				49		51			4		
58	40	40	9.40 346		9.41 784		0.58 216	9.98 561		20	1 20
	44	41	9.40 394	48	9.41 836	52	0.58 164	9.98 558	3	19	16
	48	42	9.40 442	48	9.41 887	51	0.58 113	9.98 555	3	18	12
	52	43	9.40 490	48	9.41 939	52	0.58 061	9.98 551	4	17	8
	56	44	9.40 538	48	9.41 990	51	0.58 010	9.98 548	3	16	4
				48		51			3		
59	0	45	9.40 586		9.42 041		0.57 959	9.98 545		15	1 0
	4	46	9.40 634	48	9.42 093	52	0.57 907	9.98 541	4	14	56
	8	47	9.40 682	48	9.42 144	51	0.57 856	9.98 538	3	13	52
	12	48	9.40 730	48	9.42 195	51	0.57 805	9.98 535	3	12	48
	16	49	9.40 778	48	9.42 246	51	0.57 754	9.98 531	4	11	44
				47		51			3		
59	20	50	9.40 825		9.42 297		0.57 703	9.98 528		10	0 40
	24	51	9.40 873	48	9.42 348	51	0.57 652	9.98 525	3	9	36
	28	52	9.40 921	48	9.42 399	51	0.57 601	9.98 521	4	8	32
	32	53	9.40 968	47	9.42 450	51	0.57 550	9.98 518	3	7	28
	36	54	9.41 016	48	9.42 501	51	0.57 499	9.98 515	3	6	24
				47		51			4		
59	40	55	9.41 063		9.42 552		0.57 448	9.98 511		5	0 20
	44	56	9.41 111	48	9.42 603	51	0.57 397	9.98 508	3	4	16
	48	57	9.41 158	47	9.42 653	50	0.57 347	9.98 505	3	3	12
	52	58	9.41 205	47	9.42 704	51	0.57 296	9.98 501	4	2	8
	56	59	9.41 252	47	9.42 755	51	0.57 245	9.98 498	3	1	4
				48		50			4		
60	0	60	9.41 300		9.42 805		0.57 195	9.98 494		0	0 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. n.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			15°								
m.	s.	'	L. Sin.	d	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
0	0	0	9.41 300		9.42 805		0.57 185	9.98 494		60	60 0
	4	1	9.41 347	47	9.42 856	51	0.57 144	9.98 491	3	59	56
	8	2	9.41 394	47	9.42 906	50	0.57 094	9.98 488	3	58	52
	12	3	9.41 441	47	9.42 957	51	0.57 043	9.98 484	4	57	48
	16	4	9.41 488	47	9.43 007	50	0.56 993	9.98 481	3	56	44
				47		50			4		
0	20	5	9.41 535		9.43 057		0.56 943	9.98 477		55	59 40
	24	6	9.41 582	47	9.43 108	51	0.56 892	9.98 474	3	54	36
	28	7	9.41 629	46	9.43 158	50	0.56 842	9.98 471	3	53	32
	32	8	9.41 675	47	9.43 208	50	0.56 792	9.98 467	4	52	28
	36	9	9.41 722	47	9.43 258	50	0.56 742	9.98 464	3	51	24
				46		50			4		
0	40	10	9.41 768		9.43 308		0.56 692	9.98 460		50	59 20
	44	11	9.41 815	47	9.43 358	50	0.56 642	9.98 457	3	49	16
	48	12	9.41 861	46	9.43 408	50	0.56 592	9.98 453	4	48	12
	52	13	9.41 908	47	9.43 458	50	0.56 542	9.98 450	3	47	8
	56	14	9.41 954	46	9.43 508	50	0.56 492	9.98 447	3	46	4
				47		50			4		
1	0	15	9.42 001		9.43 558		0.56 442	9.98 443		45	59 0
	4	16	9.42 047	46	9.43 607	49	0.56 393	9.98 440	3	44	56
	8	17	9.42 093	46	9.43 657	50	0.56 343	9.98 436	4	43	52
	12	18	9.42 140	47	9.43 707	50	0.56 293	9.98 433	3	42	48
	16	19	9.42 186	46	9.43 756	49	0.56 244	9.98 429	4	41	44
				46		50			3		
1	20	20	9.42 232		9.43 806		0.56 194	9.98 426		40	58 40
	24	21	9.42 278	46	9.43 856	49	0.56 145	9.98 422	4	39	36
	28	22	9.42 324	46	9.43 906	50	0.56 096	9.98 419	3	38	32
	32	23	9.42 370	46	9.43 954	49	0.56 046	9.98 415	4	37	28
	36	24	9.42 416	46	9.44 004	50	0.56 996	9.98 412	3	36	24
				45		49			3		
1	40	25	9.42 461		9.44 053		0.56 947	9.98 409		35	58 20
	44	26	9.42 507	46	9.44 102	49	0.56 898	9.98 406	4	34	16
	48	27	9.42 553	46	9.44 151	49	0.56 849	9.98 402	3	33	12
	52	28	9.42 599	46	9.44 201	50	0.56 799		4	32	8
	56	29	9.42 644	45	9.44 250	49	0.56 750	9.98 398	3	31	4
				46		49			4		
2	0	30	9.42 690		9.44 299		0.56 701	9.98 391		30	58 0
	4	31	9.42 735	45	9.44 348	49	0.56 652	9.98 388	3	29	56
	8	32	9.42 781	46	9.44 397	49	0.56 603	9.98 384	4	28	52
	12	33	9.42 826	45	9.44 446	49	0.56 554	9.98 381	3	27	48
	16	34	9.42 872	46	9.44 495	49	0.56 505	9.98 377	4	26	44
				45		49			4		
2	20	35	9.42 917		9.44 544		0.56 456	9.98 373		25	57 40
	24	36	9.42 962	45	9.44 592	48	0.56 408	9.98 370	3	24	36
	28	37	9.43 008	46	9.44 641	49	0.56 359	9.98 366	4	23	32
	32	38	9.43 053	45	9.44 690	49	0.56 310	9.98 363	3	22	28
	36	39	9.43 098	45	9.44 738	48	0.56 262	9.98 359	4	21	24
				45		49			3		
2	40	40	9.43 143		9.44 787		0.56 213	9.98 356		20	57 20
	44	41	9.43 188	45	9.44 836	49	0.56 164	9.98 352	4	19	16
	48	42	9.43 233	45	9.44 884	48	0.56 116	9.98 349	3	18	12
	52	43	9.43 278	45	9.44 933	49	0.56 067	9.98 345	4	17	8
	56	44	9.43 323	45	9.44 981	48	0.56 019	9.98 342	3	16	4
				41		48			4		
3	0	45	9.43 367		9.45 029		0.56 971	9.98 338		15	57 0
	4	46	9.43 412	45	9.45 078	49	0.56 922	9.98 334	4	14	56
	8	47	9.43 457	45	9.45 126	48	0.56 874	9.98 331	3	13	52
	12	48	9.43 502	45	9.45 174	48	0.56 826	9.98 327	4	12	48
	16	49	9.43 546	44	9.45 222	48	0.56 778	9.98 324	3	11	44
				45		49			4		
3	20	50	9.43 591		9.45 271		0.56 729	9.98 320		10	56 40
	24	51	9.43 635	44	9.45 319	48	0.56 681	9.98 317	3	9	36
	28	52	9.43 680	45	9.45 367	48	0.56 633	9.98 313	4	8	32
	32	53	9.43 724	44	9.45 415	48	0.56 585	9.98 309	4	7	28
	36	54	9.43 769	45	9.45 463	48	0.56 537	9.98 306	3	6	24
				44		48			4		
3	40	55	9.43 813		9.45 511		0.56 489	9.98 302		5	56 20
	44	56	9.43 857	44	9.45 559	48	0.56 441	9.98 299	3	4	16
	48	57	9.43 901	44	9.45 606	47	0.56 393	9.98 295	4	3	12
	52	58	9.43 946	45	9.45 654	48	0.56 346	9.98 291	4	2	8
	56	59	9.43 990	44	9.45 702	48	0.56 298	9.98 288	3	1	4
				44		48			4		
4	0	60	9.44 034		9.45 750		0.56 250	9.98 284		0	56 0
			L. Cos	d	L. Cotg	c. d.	L. Tang	L. Sin	d		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		16 <sup>o</sup>									
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
4	0	0	9.44 034		9.45 750		0.54 250	9.98 284		60	56 0
	4	1	9.44 078	44	9.45 797	47	0.54 203	9.98 281	3	59	56
	8	2	9.44 122	44	9.45 845	48	0.54 155	9.98 277	4	58	52
	12	3	9.44 166	44	9.45 892	47	0.54 108	9.98 273	4	57	48
	16	4	9.44 210	44	9.45 940	48	0.54 060	9.98 270	3	56	44
				43		47			4		
4	20	5	9.44 253		9.45 987		0.54 013	9.98 266		55	56 40
	24	6	9.44 297	44	9.46 035	48	0.53 965	9.98 262	4	54	36
	28	7	9.44 341	44	9.46 082	47	0.53 918	9.98 259	3	53	32
	32	8	9.44 385	44	9.46 130	48	0.53 870	9.98 255	4	52	28
	36	9	9.44 428	43	9.46 177	47	0.53 823	9.98 251	4	51	24
				44		47			3		
4	40	10	9.44 472		9.46 224		0.53 776	9.98 248		50	55 20
	44	11	9.44 516	44	9.46 271	47	0.53 729	9.98 244	4	49	16
	48	12	9.44 559	43	9.46 319	48	0.53 681	9.98 240	4	48	12
	52	13	9.44 602	43	9.46 366	47	0.53 634	9.98 237	3	47	8
	56	14	9.44 646	44	9.46 413	47	0.53 587	9.98 233	4	46	4
				43		47			4		
5	0	15	9.44 689		9.46 460		0.53 540	9.98 229		45	55 0
	4	16	9.44 733	44	9.46 507	47	0.53 493	9.98 226	3	44	56
	8	17	9.44 776	43	9.46 554	47	0.53 446	9.98 222	4	43	52
	12	18	9.44 819	43	9.46 601	47	0.53 399	9.98 218	4	42	48
	16	19	9.44 862	43	9.46 648	47	0.53 352	9.98 215	3	41	44
				43		46			4		
5	20	20	9.44 905		9.46 694		0.53 306	9.98 211		40	54 40
	24	21	9.44 948	43	9.46 741	47	0.53 259	9.98 207	4	39	36
	28	22	9.44 992	44	9.46 788	47	0.53 212	9.98 204	3	38	32
	32	23	9.45 035	43	9.46 835	47	0.53 165	9.98 200	4	37	28
	36	24	9.45 077	42	9.46 881	46	0.53 119	9.98 196	4	36	24
				43		47			4		
5	40	25	9.45 120		9.46 928		0.53 072	9.98 192		35	54 20
	44	26	9.45 163	43	9.46 975	47	0.53 025	9.98 189	3	34	16
	48	27	9.45 206	43	9.47 021	46	0.52 979	9.98 185	4	33	12
	52	28	9.45 249	43	9.47 068	47	0.52 932	9.98 181	4	32	8
	56	29	9.45 292	43	9.47 114	46	0.52 886	9.98 177	4	31	4
				42		46			3		
6	0	30	9.45 334		9.47 160		0.52 840	9.98 174		30	54 0
	4	31	9.45 377	43	9.47 207	47	0.52 793	9.98 170	4	29	56
	8	32	9.45 419	42	9.47 253	46	0.52 747	9.98 166	4	28	52
	12	33	9.45 462	43	9.47 299	46	0.52 701	9.98 162	4	27	48
	16	34	9.45 504	42	9.47 346	47	0.52 654	9.98 159	3	26	44
				43		46			4		
6	20	35	9.45 547		9.47 392		0.52 608	9.98 155		25	53 40
	24	36	9.45 589	42	9.47 438	46	0.52 562	9.98 151	4	24	36
	28	37	9.45 632	43	9.47 484	46	0.52 516	9.98 147	4	23	32
	32	38	9.45 674	42	9.47 530	46	0.52 470	9.98 144	3	22	28
	36	39	9.45 716	42	9.47 576	46	0.52 424	9.98 140	4	21	24
				42		46			4		
6	40	40	9.45 758		9.47 622		0.52 378	9.98 136		20	53 20
	44	41	9.45 801	43	9.47 668	46	0.52 332	9.98 132	4	19	16
	48	42	9.45 843	42	9.47 714	46	0.52 286	9.98 129	3	18	12
	52	43	9.45 885	42	9.47 760	46	0.52 240	9.98 125	4	17	8
	56	44	9.45 927	42	9.47 806	46	0.52 194	9.98 121	4	16	4
				42		46			4		
7	0	45	9.45 969		9.47 852		0.52 148	9.98 117		15	53 0
	4	46	9.46 011	42	9.47 897	45	0.52 103	9.98 113	4	14	56
	8	47	9.46 053	42	9.47 943	46	0.52 057	9.98 110	3	13	52
	12	48	9.46 095	42	9.47 989	46	0.52 011	9.98 106	4	12	48
	16	49	9.46 136	41	9.48 035	46	0.51 965	9.98 102	4	11	44
				42		45			4		
7	20	50	9.46 178		9.48 080		0.51 920	9.98 098		10	52 40
	24	51	9.46 220	42	9.48 126	46	0.51 874	9.98 094	4	9	36
	28	52	9.46 262	42	9.48 171	45	0.51 829	9.98 090	4	8	32
	32	53	9.46 303	41	9.48 217	46	0.51 783	9.98 087	3	7	28
	36	54	9.46 345	42	9.48 262	45	0.51 738	9.98 083	4	6	24
				41		45			4		
7	40	55	9.46 386		9.48 307		0.51 693	9.98 079		5	52 20
	44	56	9.46 428	42	9.48 353	46	0.51 647	9.98 075	4	4	16
	48	57	9.46 469	41	9.48 398	45	0.51 602	9.98 071	4	3	12
	52	58	9.46 511	42	9.48 443	45	0.51 557	9.98 067	4	2	8
	56	59	9.46 552	41	9.48 489	46	0.51 511	9.98 063	4	1	4
				42		45			3		
8	0	60	9.46 594		9.48 534		0.51 466	9.98 060		0	52 0
			L. Cos	d.	L. Cotg.	c. d.	L. Tang	L. Sin.	d.		m. s.

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4<sup>h</sup>

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1°		17°								
m.	s.	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
8	0	9.46 594		9.48 584		0.51 406	9.98 080		40	52
	4	9.46 636	41	9.48 579	45	0.51 421	9.98 056	4	59	56
	8	9.46 676	41	9.48 624	45	0.51 376	9.98 032	4	56	52
	12	9.46 717	41	9.48 669	45	0.51 331	9.98 048	4	57	48
	16	9.46 758	41	9.48 714	45	0.51 286	9.98 044	4	56	44
			42		45			4		
8	20	9.46 800		9.48 759		0.51 241	9.98 040		55	51
	24	9.46 841	41	9.48 804	45	0.51 196	9.98 036	4	54	46
	28	9.46 882	41	9.48 849	45	0.51 151	9.98 032	4	53	42
	32	9.46 923	41	9.48 894	45	0.51 106	9.98 028	3	52	38
	36	9.46 964	41	9.48 939	45	0.51 061	9.98 025	4	51	34
			41		45			4		
8	40	9.47 005		9.48 984		0.51 016	9.98 021		50	51
	44	9.47 046	40	9.49 029	45	0.50 971	9.98 017	4	49	46
	48	9.47 086	41	9.49 073	44	0.50 927	9.98 013	4	48	42
	52	9.47 127	41	9.49 118	45	0.50 882	9.98 009	4	47	38
	56	9.47 168	41	9.49 163	45	0.50 837	9.98 005	4	46	34
			41		44			4		
9	0	9.47 209		9.49 207		0.50 793	9.98 001		45	51
	4	9.47 249	40	9.49 252	45	0.50 748	9.97 997	4	44	46
	8	9.47 290	41	9.49 296	44	0.50 704	9.97 993	4	43	42
	12	9.47 330	40	9.49 341	45	0.50 659	9.97 989	4	42	48
	16	9.47 371	41	9.49 385	44	0.50 615	9.97 985	3	41	44
			40		45			4		
9	20	9.47 411		9.49 430		0.50 570	9.97 982		40	50
	24	9.47 452	41	9.49 474	44	0.50 525	9.97 978	4	39	46
	28	9.47 492	40	9.49 519	45	0.50 481	9.97 974	4	38	42
	32	9.47 533	41	9.49 563	44	0.50 437	9.97 970	4	37	38
	36	9.47 573	40	9.49 607	44	0.50 393	9.97 966	4	36	34
			40		45			4		
9	40	9.47 613		9.49 652		0.50 348	9.97 962		35	50
	44	9.47 654	41	9.49 696	44	0.50 304	9.97 958	4	34	46
	48	9.47 694	40	9.49 740	44	0.50 260	9.97 954	4	33	42
	52	9.47 734	40	9.49 784	44	0.50 216	9.97 950	4	32	38
	56	9.47 774	40	9.49 828	44	0.50 172	9.97 946	4	31	34
			40		44			4		
10	0	9.47 814		9.49 872		0.50 128	9.97 942		30	50
	4	9.47 854	40	9.49 916	44	0.50 084	9.97 938	4	29	46
	8	9.47 894	40	9.49 960	44	0.50 040	9.97 934	4	28	42
	12	9.47 934	40	9.50 004	44	0.49 996	9.97 930	4	27	38
	16	9.47 974	40	9.50 048	44	0.49 952	9.97 926	4	26	34
			40		44			4		
10	20	9.48 014		9.50 092		0.49 908	9.97 922		25	49
	24	9.48 054	40	9.50 136	44	0.49 864	9.97 918	4	24	46
	28	9.48 094	40	9.50 180	44	0.49 820	9.97 914	4	23	42
	32	9.48 133	39	9.50 223	43	0.49 777	9.97 910	4	22	38
	36	9.48 173	40	9.50 267	44	0.49 733	9.97 906	4	21	34
			40		44			4		
10	40	9.48 213		9.50 311		0.49 689	9.97 902		20	49
	44	9.48 252	39	9.50 355	44	0.49 645	9.97 898	4	19	46
	48	9.48 292	40	9.50 398	43	0.49 602	9.97 894	4	18	42
	52	9.48 332	40	9.50 442	44	0.49 558	9.97 890	4	17	38
	56	9.48 371	39	9.50 485	43	0.49 515	9.97 886	4	16	34
			40		44			4		
11	0	9.48 411		9.50 529		0.49 471	9.97 882		15	49
	4	9.48 450	39	9.50 572	44	0.49 428	9.97 878	4	14	46
	8	9.48 490	40	9.50 616	44	0.49 384	9.97 874	4	13	42
	12	9.48 529	39	9.50 659	43	0.49 341	9.97 870	4	12	38
	16	9.48 568	39	9.50 703	41	0.49 297	9.97 866	4	11	34
			39		43			5		
11	20	9.48 607		9.50 746		0.49 254	9.97 861		10	49
	24	9.48 647	40	9.50 789	43	0.49 211	9.97 857	4	9	46
	28	9.48 686	39	9.50 833	44	0.49 167	9.97 853	4	8	42
	32	9.48 725	39	9.50 876	43	0.49 124	9.97 849	4	7	38
	36	9.48 764	39	9.50 919	43	0.49 081	9.97 845	4	6	34
			39		43			4		
11	40	9.48 803		9.50 962		0.49 038	9.97 841		5	48
	44	9.48 842	39	9.51 005	43	0.48 995	9.97 837	4	4	46
	48	9.48 881	39	9.51 048	43	0.48 952	9.97 833	4	3	42
	52	9.48 920	39	9.51 092	44	0.48 908	9.97 829	4	2	38
	56	9.48 959	39	9.51 135	43	0.48 865	9.97 825	4	1	34
			39		43			4		
12	0	9.48 998		9.51 178		0.48 822	9.97 821		0	48
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		18°									
in.	s.	'	L. Sin	d.	L. Tang	c. d.	L. Cotg.	L. Cos.	d.		
12	0	0	9.48 996		9.51 178		0.48 822	9.97 821		60	48 0
	4	1	9.49 087	39	9.51 221	43	0.48 779	9.97 817	4	59	56
	8	2	9.49 076	39	9.51 264	43	0.48 736	9.97 812	5	58	52
	12	3	9.49 115	38	9.51 306	43	0.48 694	9.97 808	4	57	48
	16	4	9.49 153	39	9.51 349	43	0.48 651	9.97 804	4	56	44
12	20	5	9.49 192	39	9.51 392	43	0.48 608	9.97 800	4	55	40
	24	6	9.49 231	38	9.51 435	43	0.48 565	9.97 796	4	54	36
	28	7	9.49 269	39	9.51 478	42	0.48 522	9.97 792	4	53	32
	32	8	9.49 308	39	9.51 520	43	0.48 480	9.97 788	4	52	28
	36	9	9.49 347	38	9.51 563	43	0.48 437	9.97 784	5	51	24
12	40	10	9.49 385	39	9.51 606	42	0.48 394	9.97 779	4	50	20
	44	11	9.49 424	34	9.51 648	43	0.48 352	9.97 775	4	49	16
	48	12	9.49 462	34	9.51 691	43	0.48 309	9.97 771	4	48	12
	52	13	9.49 500	39	9.51 734	42	0.48 266	9.97 767	4	47	8
	56	14	9.49 539	34	9.51 776	43	0.48 224	9.97 763	4	46	4
13	0	15	9.49 577	34	9.51 819	42	0.48 181	9.97 759	5	45	0
	4	16	9.49 615	39	9.51 861	42	0.48 139	9.97 754	4	44	56
	8	17	9.49 654	34	9.51 903	43	0.48 097	9.97 750	4	43	52
	12	18	9.49 692	34	9.51 946	42	0.48 054	9.97 746	4	42	48
	16	19	9.49 730	34	9.51 988	43	0.48 012	9.97 742	4	41	44
13	20	20	9.49 768	38	9.52 031	42	0.47 969	9.97 738	4	40	40
	24	21	9.49 806	38	9.52 073	42	0.47 927	9.97 734	5	39	36
	28	22	9.49 844	34	9.52 115	42	0.47 885	9.97 729	4	38	32
	32	23	9.49 882	34	9.52 157	43	0.47 843	9.97 725	4	37	28
	36	24	9.49 920	38	9.52 200	42	0.47 800	9.97 721	4	36	24
13	40	25	9.49 958	34	9.52 242	42	0.47 758	9.97 717	4	35	20
	44	26	9.49 996	34	9.52 284	42	0.47 716	9.97 713	5	34	16
	48	27	9.50 034	34	9.52 326	42	0.47 674	9.97 708	4	33	12
	52	28	9.50 072	38	9.52 368	42	0.47 632	9.97 704	4	32	8
	56	29	9.50 110	38	9.52 410	42	0.47 590	9.97 700	4	31	4
14	0	30	9.50 148	37	9.52 452	42	0.47 548	9.97 696	5	30	0
	4	31	9.50 185	38	9.52 494	42	0.47 506	9.97 691	4	29	56
	8	32	9.50 223	38	9.52 536	42	0.47 464	9.97 687	4	28	52
	12	33	9.50 261	37	9.52 578	42	0.47 422	9.97 683	4	27	48
	16	34	9.50 298	38	9.52 620	41	0.47 380	9.97 679	5	26	44
14	20	35	9.50 336	34	9.52 661	42	0.47 339	9.97 674	4	25	40
	24	36	9.50 374	37	9.52 703	42	0.47 297	9.97 670	4	24	36
	28	37	9.50 411	38	9.52 746	42	0.47 255	9.97 666	4	23	32
	32	38	9.50 449	37	9.52 787	42	0.47 213	9.97 662	5	22	28
	36	39	9.50 486	37	9.52 829	41	0.47 171	9.97 657	4	21	24
14	40	40	9.50 523	38	9.52 870	42	0.47 130	9.97 653	4	20	20
	44	41	9.50 561	37	9.52 912	42	0.47 088	9.97 649	4	19	16
	48	42	9.50 598	37	9.52 953	41	0.47 047	9.97 645	5	18	12
	52	43	9.50 635	38	9.52 995	42	0.47 005	9.97 640	4	17	8
	56	44	9.50 673	37	9.53 037	41	0.46 963	9.97 636	4	16	4
15	0	45	9.50 710	37	9.53 078	42	0.46 922	9.97 632	4	15	0
	4	46	9.50 747	37	9.53 120	41	0.46 880	9.97 628	5	14	56
	8	47	9.50 784	37	9.53 161	41	0.46 839	9.97 623	4	13	52
	12	48	9.50 821	37	9.53 202	42	0.46 798	9.97 619	4	12	48
	16	49	9.50 858	38	9.53 244	41	0.46 756	9.97 615	5	11	44
15	20	50	9.50 896	37	9.53 285	42	0.46 715	9.97 610	4	10	40
	24	51	9.50 933	37	9.53 327	41	0.46 673	9.97 606	4	9	36
	28	52	9.50 970	37	9.53 368	41	0.46 632	9.97 602	5	8	32
	32	53	9.51 007	36	9.53 409	41	0.46 591	9.97 597	4	7	28
	36	54	9.51 043	37	9.53 450	42	0.46 550	9.97 593	4	6	24
15	40	55	9.51 080	37	9.53 492	41	0.46 508	9.97 589	5	5	20
	44	56	9.51 117	37	9.53 533	41	0.46 467	9.97 584	4	4	16
	48	57	9.51 154	37	9.53 574	41	0.46 426	9.97 580	4	3	12
	52	58	9.51 191	36	9.53 615	41	0.46 385	9.97 576	5	2	8
	56	59	9.51 227	37	9.53 656	41	0.46 344	9.97 571	4	1	4
16	0	60	9.51 264	17	9.53 697		0.46 303	9.97 567		0	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin	d.		in. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1°			19°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.	'	m.	s.
16	0	0	9.51 284	37	9.53 897	41	0.46 303	9.97 567	4	89	44	0
	4	1	9.51 301	37	9.53 738	41	0.46 262	9.97 563	6	59		56
	8	2	9.51 338	36	9.53 779	41	0.46 221	9.97 558	4	58		52
	12	3	9.51 374	37	9.53 820	41	0.46 180	9.97 554	4	57		48
	16	4	9.51 411	36	9.53 861	41	0.46 139	9.97 550	5	56		44
16	20	5	9.51 447	37	9.53 902	41	0.46 098	9.97 545	4	55	43	40
	24	6	9.51 484	36	9.53 943	41	0.46 057	9.97 541	6	54		36
	28	7	9.51 520	37	9.53 984	41	0.46 016	9.97 536	4	53		32
	32	8	9.51 557	36	9.54 025	40	0.45 975	9.97 532	4	52		28
	36	9	9.51 593	36	9.54 066	41	0.45 934	9.97 528	5	51		24
16	40	10	9.51 629	37	9.54 106	41	0.45 894	9.97 523	4	50	42	20
	44	11	9.51 666	36	9.54 147	40	0.45 853	9.97 519	4	49		16
	48	12	9.51 702	36	9.54 187	40	0.45 813	9.97 515	6	48		12
	52	13	9.51 738	36	9.54 228	41	0.45 772	9.97 510	4	47		8
	56	14	9.51 774	37	9.54 269	40	0.45 731	9.97 506	5	46		4
17	0	15	9.51 811	36	9.54 309	41	0.45 691	9.97 501	4	45	41	0
	4	16	9.51 847	36	9.54 350	40	0.45 650	9.97 497	6	44		56
	8	17	9.51 883	36	9.54 390	41	0.45 610	9.97 492	4	43		52
	12	18	9.51 919	36	9.54 431	40	0.45 569	9.97 488	4	42		48
	16	19	9.51 955	36	9.54 471	41	0.45 529	9.97 484	5	41		44
17	20	20	9.51 991	36	9.54 512	40	0.45 488	9.97 479	4	40	42	40
	24	21	9.52 027	36	9.54 552	41	0.45 448	9.97 475	5	39		36
	28	22	9.52 063	36	9.54 593	40	0.45 407	9.97 470	4	38		32
	32	23	9.52 099	36	9.54 633	40	0.45 367	9.97 466	6	37		28
	36	24	9.52 135	36	9.54 673	41	0.45 327	9.97 461	4	36		24
17	40	25	9.52 171	36	9.54 714	40	0.45 286	9.97 457	4	35	42	20
	44	26	9.52 207	35	9.54 754	40	0.45 246	9.97 453	5	34		16
	48	27	9.52 242	36	9.54 794	41	0.45 205	9.97 448	4	33		12
	52	28	9.52 278	36	9.54 835	40	0.45 165	9.97 444	5	32		8
	56	29	9.52 314	36	9.54 875	40	0.45 125	9.97 439	4	31		4
18	0	30	9.52 350	35	9.54 915	40	0.45 085	9.97 435	6	30	42	0
	4	31	9.52 386	36	9.54 955	40	0.45 045	9.97 430	4	29		56
	8	32	9.52 421	35	9.54 995	40	0.45 005	9.97 426	5	28		52
	12	33	9.52 456	36	9.55 035	40	0.44 965	9.97 421	4	27		48
	16	34	9.52 492	35	9.55 075	40	0.44 925	9.97 417	6	26		44
18	20	35	9.52 527	36	9.55 115	40	0.44 885	9.97 412	4	25	41	40
	24	36	9.52 563	35	9.55 155	40	0.44 845	9.97 408	6	24		36
	28	37	9.52 598	36	9.55 195	40	0.44 805	9.97 403	4	23		32
	32	38	9.52 634	35	9.55 235	40	0.44 765	9.97 399	5	22		28
	36	39	9.52 669	36	9.55 275	40	0.44 725	9.97 394	4	21		24
18	40	40	9.52 705	35	9.55 315	40	0.44 685	9.97 390	5	20	41	20
	44	41	9.52 740	36	9.55 355	40	0.44 645	9.97 385	4	19		16
	48	42	9.52 775	36	9.55 395	39	0.44 605	9.97 381	5	18		12
	52	43	9.52 811	35	9.55 434	40	0.44 565	9.97 376	4	17		8
	56	44	9.52 846	35	9.55 474	40	0.44 525	9.97 372	5	16		4
19	0	45	9.52 881	35	9.55 514	40	0.44 485	9.97 367	4	15	41	0
	4	46	9.52 916	35	9.55 554	39	0.44 445	9.97 363	5	14		56
	8	47	9.52 951	35	9.55 593	40	0.44 405	9.97 358	4	13		52
	12	48	9.52 986	35	9.55 633	40	0.44 365	9.97 353	6	12		48
	16	49	9.53 021	35	9.55 673	39	0.44 325	9.97 349	4	11		44
19	20	50	9.53 056	36	9.55 712	40	0.44 285	9.97 344	4	10	40	40
	24	51	9.53 092	34	9.55 752	39	0.44 245	9.97 340	5	9		36
	28	52	9.53 126	35	9.55 791	40	0.44 205	9.97 335	4	8		32
	32	53	9.53 161	35	9.55 831	39	0.44 165	9.97 331	6	7		28
	36	54	9.53 196	35	9.55 870	40	0.44 130	9.97 326	4	6		24
19	40	55	9.53 231	35	9.55 910	39	0.44 090	9.97 322	5	5	40	20
	44	56	9.53 266	35	9.55 949	40	0.44 051	9.97 317	4	4		16
	48	57	9.53 301	35	9.55 989	39	0.44 011	9.97 312	5	3		12
	52	58	9.53 336	34	9.56 028	39	0.43 972	9.97 308	4	2		8
	56	59	9.53 370	35	9.56 067	40	0.43 933	9.97 303	4	1		4
20	0	60	9.53 405		9.56 107		0.43 893	9.97 299		0	40	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			20 <sup>o</sup>								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
20	0	0	9.53 405		9.56 107		0.43 693	9.97 299		80	40 0
	4	1	9.53 440	35	9.56 146	39	0.43 854	9.97 294	5	59	56
	8	2	9.53 475	35	9.56 185	39	0.43 815	9.97 290	5	58	52
	12	3	9.53 509	34	9.56 224	39	0.43 776	9.97 285	4	57	48
	16	4	9.53 544	35	9.56 264	40	0.43 736	9.97 280	5	56	44
				34		39			4		
20	20	5	9.53 578		9.56 303		0.43 697	9.97 276		55	39 40
	24	6	9.53 613	35	9.56 342	39	0.43 658	9.97 271	5	54	36
	28	7	9.53 647	34	9.56 381	39	0.43 619	9.97 266	5	53	32
	32	8	9.53 682	■	9.56 420	39	0.43 580	9.97 262	4	52	28
	36	9	9.53 716	34	9.56 459	39	0.43 541	9.97 257	5	51	24
				35		39			5		
20	40	10	9.53 751		9.56 498		0.43 502	9.97 252		50	39 20
	44	11	9.53 785	34	9.56 537	39	0.43 463	9.97 249	4	49	16
	48	12	9.53 819	34	9.56 576	39	0.43 424	9.97 243	5	48	12
	52	13	9.53 854	35	9.56 615	39	0.43 385	9.97 238	5	47	8
	56	14	9.53 888	34	9.56 654	39	0.43 346	9.97 234	4	46	4
				34		39			5		
21	0	15	9.53 922		9.56 693		0.43 307	9.97 229		45	39 0
	4	16	9.53 957	35	9.56 732	39	0.43 268	9.97 224	5	44	56
	8	17	9.53 991	34	9.56 771	39	0.43 229	9.97 220	4	43	52
	12	18	9.54 025	34	9.56 810	39	0.43 190	9.97 215	5	42	48
	16	19	9.54 059	34	9.56 849	39	0.43 151	9.97 210	5	41	44
				34		38			4		
21	20	20	9.54 093		9.56 887		0.43 113	9.97 206		40	38 40
	24	21	9.54 127	34	9.56 926	39	0.43 074	9.97 201	5	39	36
	28	22	9.54 161	34	9.56 965	39	0.43 035	9.97 196	5	38	32
	32	23	9.54 195	34	9.57 004	39	0.42 996	9.97 192	4	37	28
	36	24	9.54 229	34	9.57 042	38	0.42 958	9.97 187	5	36	24
				34		39			5		
21	40	25	9.54 263		9.57 081		0.42 919	9.97 182		35	38 20
	44	26	9.54 297	34	9.57 120	39	0.42 880	9.97 178	4	34	16
	48	27	9.54 331	34	9.57 158	38	0.42 842	9.97 173	5	33	12
	52	28	9.54 365	34	9.57 197	39	0.42 803	9.97 168	5	32	8
	56	29	9.54 399	34	9.57 235	38	0.42 765	9.97 163	5	31	4
				34		39			4		
22	0	30	9.54 433		9.57 274		0.42 726	9.97 159		30	38 0
	4	31	9.54 466	33	9.57 312	38	0.42 688	9.97 154	5	29	56
	8	32	9.54 500	34	9.57 351	39	0.42 649	9.97 149	5	28	52
	12	33	9.54 534	34	9.57 389	38	0.42 611	9.97 145	4	27	48
	16	34	9.54 567	33	9.57 428	39	0.42 572	9.97 140	5	26	44
				34		38			5		
22	20	35	9.54 601		9.57 466		0.42 534	9.97 135		25	37 40
	24	36	9.54 635	34	9.57 504	38	0.42 496	9.97 130	5	24	36
	28	37	9.54 668	33	9.57 543	39	0.42 457	9.97 126	4	23	32
	32	38	9.54 702	34	9.57 581	38	0.42 419	9.97 121	5	22	28
	36	39	9.54 735	33	9.57 619	38	0.42 381	9.97 116	5	21	24
				34		39			5		
22	40	40	9.54 769		9.57 658		0.42 342	9.97 111		20	37 20
	44	41	9.54 802	33	9.57 696	38	0.42 304	9.97 107	4	19	16
	48	42	9.54 836	34	9.57 734	38	0.42 266	9.97 102	5	18	12
	52	43	9.54 869	33	9.57 772	38	0.42 228	9.97 097	5	17	8
	56	44	9.54 903	34	9.57 810	38	0.42 190	9.97 092	5	16	4
				33		39			5		
23	0	45	9.54 936		9.57 849		0.42 151	9.97 087		15	37 0
	4	46	9.54 969	33	9.57 887	38	0.42 113	9.97 083	4	14	56
	8	47	9.55 003	34	9.57 925	38	0.42 075	9.97 078	5	13	52
	12	48	9.55 036	33	9.57 963	38	0.42 037	9.97 073	5	12	48
	16	49	9.55 069	33	9.58 001	38	0.41 999	9.97 068	5	11	44
				33		38			5		
23	20	50	9.55 102		9.58 039		0.41 961	9.97 063		10	36 40
	24	51	9.55 136	34	9.58 077	38	0.41 923	9.97 059	4	9	36
	28	52	9.55 169	33	9.58 115	38	0.41 885	9.97 054	5	8	32
	32	53	9.55 202	33	9.58 153	38	0.41 847	9.97 049	5	7	28
	36	54	9.55 235	33	9.58 191	38	0.41 809	9.97 044	5	6	24
				33		38			5		
23	40	55	9.55 268		9.58 229		0.41 771	9.97 039		5	36 20
	44	56	9.55 301	33	9.58 267	38	0.41 733	9.97 035	4	4	16
	48	57	9.55 334	33	9.58 304	37	0.41 696	9.97 030	5	3	12
	52	58	9.55 367	33	9.58 342	38	0.41 658	9.97 025	5	2	8
	56	59	9.55 400	33	9.58 380	38	0.41 620	9.97 020	5	1	4
				33		38			5		
24	0	60	9.55 433		9.58 418		0.41 582	9.97 015		0	36 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1°			21°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
24	0	0	9.55 438		9.58 418		0.41 889	9.97 018		80	36 0
	4	1	9.55 450	33	9.58 455	37	0.41 845	9.97 010	5	50	56
	8	2	9.55 469	39	9.58 468	38	0.41 807	9.97 006	4	55	62
	12	3	9.55 522	52	9.58 531	36	0.41 469	9.97 001	4	57	68
	16	4	9.55 564	53	9.58 569	36	0.41 431	9.96 996	5	58	64
24	20	5	9.55 597		9.58 606		0.41 394	9.96 991		56	35 40
	24	6	9.55 630	39	9.58 644	39	0.41 356	9.96 986	6	64	36
	28	7	9.55 663	33	9.58 681	37	0.41 319	9.96 981	5	53	32
	32	8	9.55 695	33	9.58 719	38	0.41 281	9.96 976	5	52	28
	36	9	9.55 728	35	9.58 757	38	0.41 243	9.96 971	5	51	24
24	40	10	9.55 761		9.58 794		0.41 206	9.96 966		50	35 20
	44	11	9.55 793	32	9.58 832	38	0.41 168	9.96 962	4	49	16
	48	12	9.55 826	33	9.58 869	37	0.41 131	9.96 957	4	48	12
	52	13	9.55 858	32	9.58 907	36	0.41 093	9.96 952	5	47	8
	56	14	9.55 891	33	9.58 944	37	0.41 056	9.96 947	5	45	4
25	0	15	9.55 923		9.58 981		0.41 019	9.96 942		45	35 0
	4	16	9.55 956	33	9.59 019	38	0.40 981	9.96 937	5	44	56
	8	17	9.55 988	32	9.59 056	37	0.40 944	9.96 932	5	43	52
	12	18	9.56 021	33	9.59 094	38	0.40 906	9.96 927	5	42	48
	16	19	9.56 053	32	9.59 131	37	0.40 869	9.96 922	5	41	44
25	20	20	9.56 085		9.59 168		0.40 832	9.96 917		40	34 40
	24	21	9.56 118	39	9.59 205	37	0.40 795	9.96 912	6	39	36
	28	22	9.56 150	33	9.59 243	38	0.40 757	9.96 907	5	38	32
	32	23	9.56 182	34	9.59 280	37	0.40 720	9.96 903	4	37	28
	36	24	9.56 215	33	9.59 317	37	0.40 683	9.96 898	4	36	24
25	40	25	9.56 247		9.59 354		0.40 646	9.96 893		35	34 20
	44	26	9.56 279	32	9.59 391	37	0.40 609	9.96 888	6	34	16
	48	27	9.56 311	33	9.59 429	38	0.40 571	9.96 883	5	33	12
	52	28	9.56 343	32	9.59 466	37	0.40 534	9.96 878	5	32	8
	56	29	9.56 375	32	9.59 503	37	0.40 497	9.96 873	5	31	4
26	0	30	9.56 408		9.59 540		0.40 460	9.96 868		30	34 0
	4	31	9.56 440	32	9.59 577	37	0.40 423	9.96 863	5	29	56
	8	32	9.56 472	32	9.59 614	37	0.40 386	9.96 858	5	28	52
	12	33	9.56 504	32	9.59 651	37	0.40 349	9.96 853	5	27	48
	16	34	9.56 536	32	9.59 688	37	0.40 312	9.96 848	5	26	44
26	20	35	9.56 568		9.59 725		0.40 275	9.96 843		25	33 40
	24	36	9.56 599	31	9.59 762	37	0.40 238	9.96 838	5	24	36
	28	37	9.56 631	32	9.59 799	37	0.40 201	9.96 833	5	23	32
	32	38	9.56 663	32	9.59 835	38	0.40 165	9.96 828	5	22	28
	36	39	9.56 695	32	9.59 872	37	0.40 128	9.96 823	5	21	24
26	40	40	9.56 727		9.59 909		0.40 091	9.96 818		20	32 20
	44	41	9.56 759	32	9.59 946	37	0.40 054	9.96 813	5	19	16
	48	42	9.56 790	31	9.59 983	37	0.40 017	9.96 808	5	18	12
	52	43	9.56 822	32	9.60 019	36	0.39 981	9.96 803	5	17	8
	56	44	9.56 854	32	9.60 056	37	0.39 944	9.96 798	6	16	4
27	0	45	9.56 886		9.60 093		0.39 907	9.96 793		15	33 0
	4	46	9.56 917	31	9.60 130	37	0.39 870	9.96 788	6	14	56
	8	47	9.56 949	32	9.60 166	36	0.39 834	9.96 783	5	13	52
	12	48	9.56 980	31	9.60 203	37	0.39 797	9.96 778	5	12	48
	16	49	9.57 012	32	9.60 240	37	0.39 760	9.96 772	6	11	44
27	20	50	9.57 044		9.60 276		0.39 724	9.96 767		10	32 40
	24	51	9.57 075	31	9.60 313	37	0.39 687	9.96 762	5	9	36
	28	52	9.57 107	32	9.60 349	36	0.39 651	9.96 757	5	8	32
	32	53	9.57 138	31	9.60 386	37	0.39 614	9.96 752	5	7	28
	36	54	9.57 169	31	9.60 422	36	0.39 578	9.96 747	5	6	24
27	40	55	9.57 201		9.60 459		0.39 541	9.96 742		5	32 20
	44	56	9.57 232	31	9.60 495	36	0.39 505	9.96 737	5	4	16
	48	57	9.57 264	32	9.60 532	37	0.39 468	9.96 732	5	3	12
	52	58	9.57 295	31	9.60 568	36	0.39 432	9.96 727	5	2	8
	56	59	9.57 326	31	9.60 605	37	0.39 395	9.96 722	5	1	4
28	0	60	9.57 358		9.60 641		0.39 359	9.96 717		0	32 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			22°							
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.	
28	0	0	9.57 358		9.60 641		0.39 359	9.96 717		60 32 0
	4	1	9.57 389	31	9.60 677	36	0.39 323	9.96 711	6	59 56
	8	2	9.57 420	31	9.60 714	37	0.39 286	9.96 706	5	58 52
	12	3	9.57 451	31	9.60 750	86	0.39 250	9.96 701	5	57 48
	16	4	9.57 482	31	9.60 786	36	0.39 214	9.96 696	5	56 44
				32		37			5	
28	20	5	9.57 514		9.60 823		0.39 177	9.96 691		55 31 40
	24	6	9.57 545	31	9.60 859	36	0.39 141	9.96 686	5	54 36
	28	7	9.57 576	31	9.60 895	36	0.39 105	9.96 681	5	53 32
	32	8	9.57 607	31	9.60 931	36	0.39 069	9.96 676	5	52 28
	36	9	9.57 638	31	9.60 967	36	0.39 033	9.96 670	6	51 24
				31		37			5	
28	40	10	9.57 669		9.61 004		0.38 996	9.96 665		50 31 20
	44	11	9.57 700	31	9.61 040	36	0.38 960	9.96 660	5	49 16
	48	12	9.57 731	31	9.61 076	36	0.38 924	9.96 655	5	48 12
	52	13	9.57 762	31	9.61 112	36	0.38 888	9.96 650	5	47 8
	56	14	9.57 793	31	9.61 148	36	0.38 852	9.96 645	5	46 4
				31		36			5	
29	0	15	9.57 824		9.61 184		0.38 816	9.96 640		45 31 0
	4	16	9.57 855	31	9.61 220	36	0.38 780	9.96 634	6	44 56
	8	17	9.57 885	30	9.61 256	36	0.38 744	9.96 629	5	43 52
	12	18	9.57 916	31	9.61 292	36	0.38 708	9.96 624	5	42 48
	16	19	9.57 947	31	9.61 328	36	0.38 672	9.96 619	5	41 44
				31		36			5	
29	20	20	9.57 978		9.61 364		0.38 636	9.96 614		40 30 40
	24	21	9.58 008	30	9.61 400	36	0.38 600	9.96 608	6	39 36
	28	22	9.58 039	31	9.61 436	36	0.38 564	9.96 603	5	38 32
	32	23	9.58 070	31	9.61 472	36	0.38 528	9.96 598	5	37 28
	36	24	9.58 101	31	9.61 508	36	0.38 492	9.96 593	5	36 24
				30		36			5	
29	40	25	9.58 131		9.61 544		0.38 456	9.96 588		35 30 20
	44	26	9.58 162	31	9.61 579	35	0.38 421	9.96 582	6	34 16
	48	27	9.58 192	30	9.61 615	36	0.38 385	9.96 577	5	33 12
	52	28	9.58 223	31	9.61 651	36	0.38 349	9.96 572	5	32 8
	56	29	9.58 253	30	9.61 687	36	0.38 313	9.96 567	5	31 4
				31		35			5	
30	0	30	9.58 284		9.61 722		0.38 278	9.96 562		30 30 0
	4	31	9.58 314	30	9.61 758	36	0.38 242	9.96 556	6	29 56
	8	32	9.58 345	31	9.61 794	36	0.38 206	9.96 551	5	28 52
	12	33	9.58 375	30	9.61 830	36	0.38 170	9.96 546	5	27 48
	16	34	9.58 406	31	9.61 865	35	0.38 135	9.96 541	5	26 44
				30		36			6	
30	20	35	9.58 436		9.61 901		0.38 099	9.96 535		25 29 40
	24	36	9.58 467	31	9.61 936	35	0.38 064	9.96 530	5	24 36
	28	37	9.58 497	30	9.61 972	36	0.38 028	9.96 525	5	23 32
	32	38	9.58 527	30	9.62 008	36	0.37 992	9.96 520	5	22 28
	36	39	9.58 557	30	9.62 043	35	0.37 957	9.96 514	6	21 24
				31		36			5	
30	40	40	9.58 588		9.62 079		0.37 921	9.96 509		20 29 20
	44	41	9.58 618	30	9.62 114	35	0.37 886	9.96 504	5	19 16
	48	42	9.58 648	30	9.62 150	36	0.37 850	9.96 498	6	18 12
	52	43	9.58 678	30	9.62 185	35	0.37 815	9.96 493	5	17 8
	56	44	9.58 709	31	9.62 221	36	0.37 779	9.96 488	5	16 4
				30		35			5	
31	0	45	9.58 739		9.62 256		0.37 744	9.96 483		15 29 0
	4	46	9.58 769	30	9.62 292	36	0.37 708	9.96 477	6	14 56
	8	47	9.58 799	30	9.62 327	35	0.37 673	9.96 472	5	13 52
	12	48	9.58 829	30	9.62 362	35	0.37 638	9.96 467	5	12 48
	16	49	9.58 859	30	9.62 398	36	0.37 602	9.96 461	6	11 44
				30		35			5	
31	20	50	9.58 889		9.62 433		0.37 567	9.96 456		10 28 40
	24	51	9.58 919	30	9.62 468	35	0.37 532	9.96 451	5	9 36
	28	52	9.58 949	30	9.62 504	36	0.37 496	9.96 445	6	8 32
	32	53	9.58 979	30	9.62 539	35	0.37 461	9.96 440	5	7 28
	36	54	9.59 009	30	9.62 574	35	0.37 426	9.96 435	5	6 24
				30		35			6	
31	40	55	9.59 039		9.62 609		0.37 391	9.96 429		5 28 20
	44	56	9.59 069	30	9.62 645	36	0.37 355	9.96 424	5	4 16
	48	57	9.59 098	29	9.62 680	35	0.37 320	9.96 419	5	3 12
	52	58	9.59 128	30	9.62 715	35	0.37 285	9.96 413	6	2 8
	56	59	9.59 158	30	9.62 750	35	0.37 250	9.96 408	5	1 4
				30		35			5	
32	0	60	9.59 188		9.62 785		0.37 215	9.96 403		0 28 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	m. s.

TABLE 21 — *Five-place logarithms of circular functions, etc.*—Continued.

1°			93°									
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
32	0	0	9.59 186		9.62 785		0.37 215	9.96 405		00	26	0
	1		9.59 218	30	9.62 820	35	0.37 180	9.96 397	6	59		56
	2		9.59 247	29	9.62 855	35	0.37 145	9.96 392	5	58		52
	12	3	9.59 277	30	9.62 890	35	0.37 110	9.96 387	5	57		48
	16	4	9.59 307	30	9.62 925	35	0.37 074	9.96 381	5	56		44
				29		35			5			
32	20	5	9.59 336	30	9.62 961	35	0.37 039	9.96 376	6	55	27	40
	24	6	9.59 366	30	9.62 996	35	0.37 004	9.96 370	5	54		36
	28	7	9.59 396	29	9.63 031	35	0.36 969	9.96 365	5	53		32
	32	8	9.59 425	30	9.63 066	35	0.36 934	9.96 360	5	52		28
	36	9	9.59 455	30	9.63 101	35	0.36 899	9.96 354	5	51		24
				29		34			5			
32	40	10	9.59 484		9.63 136		0.36 865	9.96 349		50	27	20
	44	11	9.59 514	30	9.63 170	35	0.36 830	9.96 343	6	49		16
	48	12	9.59 543	29	9.63 205	35	0.36 795	9.96 338	5	48		12
	52	13	9.59 573	30	9.63 240	35	0.36 760	9.96 333	5	47		8
	56	14	9.59 602	29	9.63 275	35	0.36 725	9.96 327	5	46		4
				30		35			5			
33	0	15	9.59 632	29	9.63 310		0.36 690	9.96 322		45	27	0
	4	16	9.59 661	29	9.63 345	35	0.36 655	9.96 316	6	44		56
	8	17	9.59 690	29	9.63 379	34	0.36 621	9.96 311	5	43		52
	12	18	9.59 720	30	9.63 414	35	0.36 586	9.96 305	5	42		48
	16	19	9.59 749	29	9.63 449	35	0.36 551	9.96 300	5	41		44
				29		35			6			
33	20	20	9.59 778		9.63 484		0.36 516	9.96 294		40	26	40
	24	21	9.59 808	30	9.63 519	35	0.36 481	9.96 289	5	39		36
	28	22	9.59 837	29	9.63 553	34	0.36 447	9.96 284	5	38		32
	32	23	9.59 866	29	9.63 588	35	0.36 412	9.96 278	5	37		28
	36	24	9.59 895	29	9.63 623	35	0.36 377	9.96 273	5	36		24
				29		34			6			
33	40	25	9.59 924	30	9.63 657		0.36 343	9.96 267		35	26	20
	44	26	9.59 954	29	9.63 692	35	0.36 308	9.96 262	5	34		16
	48	27	9.59 983	29	9.63 726	34	0.36 274	9.96 256	5	33		12
	52	28	9.60 012	29	9.63 761	35	0.36 239	9.96 251	5	32		8
	56	29	9.60 041	29	9.63 795	35	0.36 204	9.96 245	5	31		4
				29		34			5			
34	0	30	9.60 070		9.63 830		0.36 170	9.96 240		30	26	0
	4	31	9.60 099	29	9.63 865	35	0.36 135	9.96 234	6	29		56
	8	32	9.60 128	29	9.63 899	34	0.36 101	9.96 229	5	28		52
	12	33	9.60 157	29	9.63 934	35	0.36 066	9.96 223	5	27		48
	16	34	9.60 186	29	9.63 968	34	0.36 032	9.96 218	5	26		44
				29		35			6			
34	20	35	9.60 215	29	9.64 003		0.35 997	9.96 212		25	25	40
	24	36	9.60 244	29	9.64 037	34	0.35 963	9.96 207	5	24		36
	28	37	9.60 273	29	9.64 072	35	0.35 928	9.96 201	5	23		32
	32	38	9.60 302	29	9.64 106	34	0.35 894	9.96 196	5	22		28
	36	39	9.60 331	28	9.64 140	34	0.35 860	9.96 190	5	21		24
				28		35			5			
34	40	40	9.60 359		9.64 175		0.35 825	9.96 185		20	25	20
	44	41	9.60 388	29	9.64 209	34	0.35 791	9.96 179	6	19		16
	48	42	9.60 417	29	9.64 243	34	0.35 757	9.96 174	5	18		12
	52	43	9.60 446	29	9.64 278	35	0.35 722	9.96 168	5	17		8
	56	44	9.60 474	28	9.64 312	34	0.35 688	9.96 162	5	16		4
				29		34			5			
35	0	45	9.60 503	29	9.64 346		0.35 654	9.96 157		15	25	0
	4	46	9.60 532	29	9.64 381	35	0.35 619	9.96 151	6	14		56
	8	47	9.60 561	29	9.64 415	34	0.35 585	9.96 146	5	13		52
	12	48	9.60 589	29	9.64 449	34	0.35 551	9.96 140	5	12		48
	16	49	9.60 618	28	9.64 483	34	0.35 517	9.96 135	6	11		44
				28		34			6			
35	20	50	9.60 646	29	9.64 517		0.35 483	9.96 129		10	24	40
	24	51	9.60 675	29	9.64 552	35	0.35 448	9.96 123	6	9		36
	28	52	9.60 704	29	9.64 586	34	0.35 414	9.96 118	5	8		32
	32	53	9.60 732	29	9.64 620	34	0.35 380	9.96 112	5	7		28
	36	54	9.60 761	28	9.64 654	34	0.35 346	9.96 107	6	6		24
				28		34			6			
35	40	55	9.60 789		9.64 689		0.35 312	9.96 101		5	24	20
	44	56	9.60 818	29	9.64 722	34	0.35 278	9.96 095	6	4		16
	48	57	9.60 846	28	9.64 756	34	0.35 244	9.96 090	5	3		12
	52	58	9.60 875	29	9.64 790	34	0.35 210	9.96 084	5	2		8
	56	59	9.60 903	28	9.64 824	34	0.35 176	9.96 079	5	1		4
				28		34			6			
35	0	60	9.60 931		9.64 858		0.35 142	9.96 073		0	24	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			24 <sup>o</sup>									
mi.	in.		L. Sin.	d.	L. Tang.	c d.	L. Cotg.	L. Cos.	d.		mi.	in.
36	0	0	9.60 931		9.64 858		0.35 142	9.96 073		60	24	0
	4	1	9.60 980	29	9.64 892	34	0.35 108	9.96 067	6	59		56
	8	2	9.60 988	28	9.64 926	34	0.35 071	9.96 062	5	58		52
	12	3	9.61 016	28	9.64 960	34	0.35 040	9.96 056	6	57		48
	16	4	9.61 045	29	9.64 994	34	0.35 006	9.96 050	6	56		44
				28		34			5			
36	20	5	9.61 073		9.65 028		0.34 972	9.96 045		55	23	40
	24	6	9.61 101	28	9.65 062	34	0.34 938	9.96 039	6	54		36
	28	7	9.61 129	28	9.65 096	34	0.34 904	9.96 034	5	53		32
	32	8	9.61 158	29	9.65 130	34	0.34 870	9.96 028	6	52		28
	36	9	9.61 186	28	9.65 164	34	0.34 836	9.96 022	6	51		24
				28		33			5			
36	40	10	9.61 214		9.65 197		0.34 803	9.96 017		50	23	20
	44	11	9.61 242	28	9.65 231	34	0.34 769	9.96 011	6	49		16
	48	12	9.61 270	28	9.65 265	34	0.34 735	9.96 006	6	48		12
	52	13	9.61 298	28	9.65 299	34	0.34 701	9.96 000	5	47		8
	56	14	9.61 326	29	9.65 333	34	0.34 667	9.96 994	6	46		4
				28		33			6			
37	0	15	9.61 354		9.65 366		0.34 634	9.96 988		45	23	0
	4	16	9.61 382	28	9.65 400	34	0.34 600	9.96 982	6	44		56
	8	17	9.61 411	29	9.65 434	34	0.34 566	9.96 977	5	43		52
	12	18	9.61 438	27	9.65 467	33	0.34 533	9.96 971	6	42		48
	16	19	9.61 466	28	9.65 501	34	0.34 499	9.96 965	6	41		44
				28		34			5			
37	20	20	9.61 494		9.65 535		0.34 465	9.96 960		40	22	40
	24	21	9.61 522	28	9.65 568	33	0.34 432	9.96 954	6	39		36
	28	22	9.61 550	28	9.65 602	34	0.34 398	9.96 948	6	38		32
	32	23	9.61 578	28	9.65 636	34	0.34 364	9.96 942	6	37		28
	36	24	9.61 606	28	9.65 669	33	0.34 331	9.96 937	6	36		24
				29		34			6			
37	40	25	9.61 634		9.65 703		0.34 297	9.96 931		35	22	20
	44	26	9.61 662	28	9.65 736	33	0.34 264	9.96 925	6	34		16
	48	27	9.61 689	27	9.65 770	34	0.34 230	9.96 920	5	33		12
	52	28	9.61 717	28	9.65 803	33	0.34 197	9.96 914	6	32		8
	56	29	9.61 745	28	9.65 837	34	0.34 163	9.96 908	6	31		4
				29		33			6			
38	0	30	9.61 773		9.65 870		0.34 130	9.96 902		30	22	0
	4	31	9.61 800	27	9.65 904	34	0.34 096	9.96 897	5	29		56
	8	32	9.61 828	28	9.65 937	33	0.34 063	9.96 891	6	28		52
	12	33	9.61 856	28	9.65 971	34	0.34 029	9.96 885	6	27		48
	16	34	9.61 883	27	9.66 004	33	0.33 996	9.96 879	6	26		44
				29		34			6			
38	20	35	9.61 911		9.66 038		0.33 962	9.96 873		25	21	40
	24	36	9.61 939	28	9.66 071	33	0.33 929	9.96 868	5	24		36
	28	37	9.61 966	27	9.66 104	33	0.33 896	9.96 862	6	23		32
	32	38	9.61 994	28	9.66 138	34	0.33 862	9.96 856	6	22		28
	36	39	9.62 021	27	9.66 171	33	0.33 829	9.96 850	6	21		24
				29		33			6			
38	40	40	9.62 049		9.66 204		0.33 796	9.96 844		20	21	20
	44	41	9.62 076	27	9.66 238	34	0.33 762	9.96 839	5	19		16
	48	42	9.62 104	28	9.66 271	33	0.33 729	9.96 833	6	18		12
	52	43	9.62 131	27	9.66 304	33	0.33 696	9.96 827	6	17		8
	56	44	9.62 159	28	9.66 337	33	0.33 663	9.96 821	6	16		4
				27		34			6			
39	0	45	9.62 186		9.66 371		0.33 629	9.96 815		15	21	0
	4	46	9.62 214	28	9.66 404	33	0.33 596	9.96 810	5	14		56
	8	47	9.62 241	27	9.66 437	33	0.33 563	9.96 804	6	13		52
	12	48	9.62 268	27	9.66 470	33	0.33 530	9.96 798	6	12		48
	16	49	9.62 296	28	9.66 503	33	0.33 497	9.96 792	6	11		44
				27		34			6			
39	20	50	9.62 323		9.66 537		0.33 463	9.96 786		10	20	40
	24	51	9.62 350	27	9.66 570	33	0.33 430	9.96 780	6	9		36
	28	52	9.62 377	27	9.66 603	33	0.33 397	9.96 775	6	8		32
	32	53	9.62 405	28	9.66 636	33	0.33 364	9.96 769	6	7		28
	36	54	9.62 432	27	9.66 669	33	0.33 331	9.96 763	6	6		24
				27		33			6			
39	40	55	9.62 459		9.66 702		0.33 298	9.96 757		5	20	20
	44	56	9.62 486	27	9.66 735	33	0.33 265	9.96 751	6	4		16
	48	57	9.62 513	27	9.66 768	33	0.33 232	9.96 745	6	3		12
	52	58	9.62 541	28	9.66 801	33	0.33 199	9.96 739	6	2		8
	56	59	9.62 568	27	9.66 834	33	0.33 166	9.96 733	6	1		4
				27		33			5			
40	0	60	9.62 595		9.66 867		0.33 133	9.96 728		0	20	0
			L. Cos.	d.	L. Cotg.	c d.	L. Tang.	L. Sin.	d.		mi.	in.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1°			15°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
40	0	0	9. 62 622	27	9. 66 867	33	0. 33 133	9. 95 728	6	40	20 0
	4	1	9. 62 622	27	9. 66 900	33	0. 33 100	9. 95 722	6	50	56
	8	2	9. 62 649	27	9. 66 983	33	0. 33 087	9. 95 716	6	58	52
	12	3	9. 62 676	27	9. 66 966	33	0. 33 084	9. 95 710	6	57	48
	16	4	9. 62 703	27	9. 66 999	33	0. 33 001	9. 95 704	6	56	44
				27		33			6		
40	20	5	9. 62 730	27	9. 67 082	38	0. 32 968	9. 95 696	6	55	19 40
	24	6	9. 62 757	27	9. 67 065	38	0. 32 935	9. 95 692	6	54	36
	28	7	9. 62 784	27	9. 67 098	38	0. 32 902	9. 95 686	6	53	32
	32	8	9. 62 811	27	9. 67 181	33	0. 32 869	9. 95 680	6	52	28
	36	9	9. 62 838	27	9. 67 168	33	0. 32 837	9. 95 674	6	51	24
				27		33			6		
40	40	10	9. 62 865		9. 67 196		0. 32 804	9. 95 668	5	50	19 20
	44	11	9. 62 892		9. 67 229	38	0. 32 771	9. 95 663	6	49	16
	48	12	9. 62 918	26	9. 67 262	38	0. 32 738	9. 95 657	6	48	12
	52	13	9. 62 945	27	9. 67 295	33	0. 32 705	9. 95 651	6	47	8
	56	14	9. 62 972	27	9. 67 327	33	0. 32 673	9. 95 645	6		4
				27		33			6		
41	0	15	9. 62 999		9. 67 360		0. 32 640	9. 95 639	6	45	19 0
	4	16	9. 63 026	27	9. 67 393	33	0. 32 607	9. 95 633	6	44	36
	8	17	9. 63 052	26	9. 67 426	33	0. 32 574	9. 95 627	6		32
	12	18	9. 63 079	27	9. 67 458	32	0. 32 542	9. 95 621	6	42	48
	16	19	9. 63 106	27	9. 67 491	33	0. 32 509	9. 95 615	6	41	44
				27		33			6		
41	20	20	9. 63 133		9. 67 524		0. 32 476	9. 95 609	6	40	18 40
	24	21	9. 63 159	26	9. 67 556	32	0. 32 444	9. 95 603	6	39	36
	28	22	9. 63 186	27	9. 67 589	33	0. 32 411	9. 95 597	6	38	32
	32	23	9. 63 213	27	9. 67 622	33	0. 32 378	9. 95 591	6	37	28
	36	24	9. 63 239	26	9. 67 654	32	0. 32 346	9. 95 585	6	36	24
				27		33			6		
41	40	25	9. 63 266		9. 67 687		0. 32 313	9. 95 579	6	35	18 36
	44	26	9. 63 292	26	9. 67 719	32	0. 32 281	9. 95 573	6	34	12
	48	27	9. 63 319	27	9. 67 752	33	0. 32 249	9. 95 567	6	33	8
	52	28	9. 63 345	26	9. 67 785	33	0. 32 216	9. 95 561	6	32	4
	56	29	9. 63 372	27	9. 67 817	32	0. 32 183	9. 95 555	6	31	
				26		33			6		
42	0	30	9. 63 398		9. 67 850		0. 32 150	9. 95 549	6	30	18 0
	4	31	9. 63 425	27	9. 67 882	32	0. 32 118	9. 95 543	6	29	56
	8	32	9. 63 451	26	9. 67 915	33	0. 32 085	9. 95 537	6	28	52
	12	33	9. 63 478	27	9. 67 947	32	0. 32 053	9. 95 531	6	27	48
	16	34	9. 63 504	26	9. 67 980	33	0. 32 020	9. 95 525	6	26	44
				27		32			6		
42	20	35	9. 63 531		9. 68 012		0. 31 988	9. 95 519	6	25	17 40
	24	36	9. 63 557	26	9. 68 044	32	0. 31 956	9. 95 513	6	24	36
	28	37	9. 63 583	26	9. 68 077	33	0. 31 923	9. 95 507	6	23	32
	32	38	9. 63 610	27	9. 68 109	32	0. 31 891	9. 95 500	7	22	28
	36	39	9. 63 636	26	9. 68 142	33	0. 31 858	9. 95 494	6	21	24
				26		32			6		
42	40	40	9. 63 662		9. 68 174		0. 31 826	9. 95 488	6	20	17 20
	44	41	9. 63 689	27	9. 68 206	32	0. 31 794	9. 95 482	6	19	16
	48	42	9. 63 715	26	9. 68 239	33	0. 31 761	9. 95 476	6	18	12
	52	43	9. 63 741	26	9. 68 271	32	0. 31 729	9. 95 470	6	17	8
	56	44	9. 63 767	26	9. 68 303	32	0. 31 697	9. 95 464	6	16	4
				27		33			6		
43	0	45	9. 63 794		9. 68 336		0. 31 664	9. 95 458	6	15	17 0
	4	46	9. 63 820	26	9. 68 368	32	0. 31 632	9. 95 452	6	14	56
	8	47	9. 63 846	26	9. 68 400	32	0. 31 600	9. 95 446	6	13	52
	12	48	9. 63 872	26	9. 68 432	32	0. 31 568	9. 95 440	6	12	48
	16	49	9. 63 898	26	9. 68 465	33	0. 31 536	9. 95 434	6	11	44
				26		32			7		
43	20	50	9. 63 924		9. 68 497		0. 31 503	9. 95 427	6	10	16 40
	24	51	9. 63 950	26	9. 68 529	32	0. 31 471	9. 95 421	6	9	36
	28	52	9. 63 976	26	9. 68 561	32	0. 31 439	9. 95 415	6	8	32
	32	53	9. 64 002	26	9. 68 593	32	0. 31 407	9. 95 409	6	7	28
	36	54	9. 64 028	26	9. 68 626	33	0. 31 374	9. 95 403	6	6	24
				26		32			6		
43	40	55	9. 64 054		9. 68 658		0. 31 342	9. 95 397	6	5	16 20
	44	56	9. 64 080	26	9. 68 690	32	0. 31 310	9. 95 391	6	4	16
	48	57	9. 64 106	26	9. 68 722	32	0. 31 278	9. 95 384	7	3	12
	52	58	9. 64 132	26	9. 68 754	32	0. 31 246	9. 95 378	6	2	8
	56	59	9. 64 158	26	9. 68 786	32	0. 31 214	9. 95 372	6	1	4
				26		32			6		
44	0	60	9. 64 184		9. 68 818		0. 31 182	9. 95 366	6	0	16 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.



TABLE 21. — Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>		26°											
m.	s.		L. Sin.	d.	L. Tang.	c.d.	L. Cotg.	L. Cos.	d.				
44	0	0	9.64 164		9.68 818		0.31 182	9.95 366		60	16	0	
	4	1	9.64 210	26	9.68 850	32	0.31 150	9.95 360	6	59		56	
	8	2	9.64 236	26	9.68 882	32	0.31 118	9.95 354	6	58		52	
	12	3	9.64 262	26	9.68 914	32	0.31 086	9.95 348	6	57		48	
	16	4	9.64 288	26	9.68 946	32	0.31 054	9.95 341	7	56		44	
				25		32			6				
44	20	6	9.64 313		9.68 978		0.31 022	9.95 335		55	15	40	
	24	6	9.64 339	26	9.69 010	32	0.30 990	9.95 329	6	54		36	
	28	7	9.64 365	26	9.69 042	32	0.30 958	9.95 323	6	53		32	
	32	8	9.64 391	26	9.69 074	32	0.30 926	9.95 317	6	52		28	
	36	9	9.64 417	26	9.69 106	32	0.30 894	9.95 310	7	51		24	
				25		32			6				
44	40	10	9.64 442		9.69 138		0.30 862	9.95 304		50	15	20	
	44	11	9.64 468	26	9.69 170	32	0.30 830	9.95 298	6	49		16	
	48	12	9.64 494	26	9.69 202	32	0.30 798	9.95 292	6	48		12	
	52	13	9.64 519	25	9.69 234	32	0.30 766	9.95 286	6	47		8	
	56	14	9.64 545	26	9.69 266	32	0.30 734	9.95 279	7	46		4	
				26		32			6				
45	0	15	9.64 571		9.69 298		0.30 702	9.95 273		45	15	0	
	4	16	9.64 596	25	9.69 329	31	0.30 671	9.95 267	6	44		56	
	8	17	9.64 622	26	9.69 361	32	0.30 639	9.95 261	6	43		52	
	12	18	9.64 647	25	9.69 393	32	0.30 607	9.95 254	7	42		48	
	16	19	9.64 673	26	9.69 425	32	0.30 575	9.95 248	6	41		44	
				25		32			6				
45	20	20	9.64 698		9.69 457		0.30 543	9.95 242		40	14	40	
	24	21	9.64 724	26	9.69 488	31	0.30 512	9.95 236	6	39		36	
	28	22	9.64 749	25	9.69 520	32	0.30 480	9.95 230	7	38		32	
	32	23	9.64 775	26	9.69 552	32	0.30 448	9.95 223	6	37		28	
	36	24	9.64 800	25	9.69 584	31	0.30 416	9.95 217	6	36		24	
				26		31			6				
45	40	25	9.64 826		9.69 615		0.30 385	9.95 211		35	14	20	
	44	26	9.64 851	25	9.69 647	32	0.30 353	9.95 204	7	34		16	
	48	27	9.64 877	26	9.69 679	32	0.30 321	9.95 198	6	33		12	
	52	28	9.64 902	25	9.69 710	31	0.30 290	9.95 192	6	32		8	
	56	29	9.64 927	26	9.69 742	32	0.30 258	9.95 185	7	31		4	
				26		32			6				
46	0	30	9.64 953		9.69 774		0.30 226	9.95 179		30	14	0	
	4	31	9.64 978	25	9.69 805	31	0.30 195	9.95 173	6	29		56	
	8	32	9.65 003	26	9.69 837	32	0.30 163	9.95 167	6	28		52	
	12	33	9.65 029	25	9.69 868	31	0.30 132	9.95 160	7	27		48	
	16	34	9.65 054	26	9.69 900	32	0.30 100	9.95 154	6	26		44	
				25		32			6				
46	20	35	9.65 079		9.69 932		0.30 068	9.95 148		25	13	40	
	24	36	9.65 104	25	9.69 963	31	0.30 037	9.95 141	7	24		36	
	28	37	9.65 130	26	9.69 995	32	0.30 006	9.95 135	6	23		32	
	32	38	9.65 155	25	9.70 026	31	0.29 974	9.95 129	6	22		28	
	36	39	9.65 180	26	9.70 058	32	0.29 942	9.95 122	7	21		24	
				25		31			6				
46	40	40	9.65 205		9.70 089		0.29 911	9.95 116		20	13	20	
	44	41	9.65 230	25	9.70 121	32	0.29 879	9.95 110	6	19		16	
	48	42	9.65 255	26	9.70 152	31	0.29 848	9.95 103	7	18		12	
	52	43	9.65 281	25	9.70 184	32	0.29 816	9.95 097	6	17		8	
	56	44	9.65 306	26	9.70 215	31	0.29 785	9.95 090	7	16		4	
				25		32			6				
47	0	45	9.65 331		9.70 247		0.29 753	9.95 084		15	13	0	
	4	46	9.65 356	25	9.70 278	31	0.29 722	9.95 078	6	14		56	
	8	47	9.65 381	26	9.70 309	32	0.29 691	9.95 071	7	13		52	
	12	48	9.65 406	25	9.70 341	31	0.29 659	9.95 065	6	12		48	
	16	49	9.65 431	26	9.70 372	32	0.29 628	9.95 059	6	11		44	
				25		32			7				
47	20	50	9.65 456		9.70 404		0.29 596	9.95 052		10	12	40	
	24	51	9.65 481	25	9.70 435	31	0.29 565	9.95 046	6	9		36	
	28	52	9.65 506	26	9.70 466	32	0.29 534	9.95 039	7	8		32	
	32	53	9.65 531	25	9.70 498	31	0.29 502	9.95 033	6	7		28	
	36	54	9.65 556	26	9.70 529	32	0.29 471	9.95 027	7	6		24	
				24		31			7				
47	40	55	9.65 580		9.70 560		0.29 440	9.95 020		5	12	20	
	44	56	9.65 606	25	9.70 592	32	0.29 408	9.95 014	6	4		16	
	48	57	9.65 630	26	9.70 623	31	0.29 377	9.95 007	7	3		12	
	52	58	9.65 655	25	9.70 654	32	0.29 346	9.95 001	6	2		8	
	56	59	9.65 680	26	9.70 685	31	0.29 315	9.94 995	6	1		4	
				25		32			7				
48	0	60	9.65 705		9.70 717		0.29 283	9.94 988		0	12	0	
			L. Cos.	d.	L. Cotg.	c.d.	L. Tang.	L. Sin.	d.		m.	s.	



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1°		97°									
m.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
48	0	9.65 705		9.70 717		0.29 223	9.94 988		68	12	0
	4	9.65 729	24	9.70 748	31	0.29 252	9.94 982	6	59		56
	8	9.65 754	25	9.70 779	31	0.29 221	9.94 975	7	58		52
	12	9.65 779	25	9.70 810	31	0.29 190	9.94 969	6	57		48
	16	9.65 804	25	9.70 841	31	0.29 159	9.94 962	7	56		44
			24		32			6			
48	20	9.65 828		9.70 873		0.29 127	9.94 956		55	11	40
	24	9.65 853	25	9.70 904	31	0.29 095	9.94 949	7	54		36
	28	9.65 878	25	9.70 935	31	0.29 065	9.94 943	6	53		32
	32	9.65 902	24	9.70 966	31	0.29 034	9.94 936	7	52		28
	36	9.65 927	25	9.70 997	31	0.29 003	9.94 930	6	51		24
			25		31			7			
48	40	9.65 952		9.71 028		0.28 972	9.94 923		50	11	20
	44	9.65 976	24	9.71 059	31	0.28 941	9.94 917	6	49		16
	48	9.66 001	25	9.71 090	31	0.28 910	9.94 911	6	48		12
	52	9.66 025	24	9.71 121	31	0.28 879	9.94 904	7	47		8
	56	9.66 050	25	9.71 153	32	0.28 847	9.94 898	6	46		4
			25		31			7			
49	0	9.66 075		9.71 184		0.28 816	9.94 891		45	11	0
	4	9.66 099	24	9.71 215	31	0.28 785	9.94 885	6	44		56
	8	9.66 124	25	9.71 246	31	0.28 754	9.94 878	7	43		52
	12	9.66 148	24	9.71 277	31	0.28 723	9.94 871	7	42		48
	16	9.66 173	25	9.71 308	31	0.28 692	9.94 865	6	41		44
			24		31			7			
49	20	9.66 197		9.71 339		0.28 661	9.94 858		40	10	40
	24	9.66 221	24	9.71 370	31	0.28 630	9.94 852	6	39		36
	28	9.66 246	25	9.71 401	31	0.28 599	9.94 845	7	38		32
	32	9.66 270	24	9.71 431	30	0.28 569	9.94 839	6	37		28
	36	9.66 295	25	9.71 462	31	0.28 538	9.94 832	7	36		24
			24		31			6			
49	40	9.66 319		9.71 493		0.28 507	9.94 826		35	10	20
	44	9.66 343	24	9.71 524	31	0.28 476	9.94 819	7	34		16
	48	9.66 368	25	9.71 555	31	0.28 445	9.94 813	6	33		12
	52	9.66 392	24	9.71 586	31	0.28 414	9.94 806	7	32		8
	56	9.66 416	24	9.71 617	31	0.28 383	9.94 799	7	31		4
			25		31			6			
50	0	9.66 441		9.71 648		0.28 352	9.94 793		30	10	0
	4	9.66 465	24	9.71 679	31	0.28 321	9.94 786	7	29		56
	8	9.66 489	24	9.71 709	30	0.28 291	9.94 780	6	28		52
	12	9.66 513	24	9.71 740	31	0.28 260	9.94 773	7	27		48
	16	9.66 537	24	9.71 771	31	0.28 229	9.94 767	6	26		44
			25		31			7			
50	20	9.66 562		9.71 802		0.28 198	9.94 760		25	9	40
	24	9.66 586	24	9.71 833	31	0.28 167	9.94 753	7	24		36
	28	9.66 610	24	9.71 863	30	0.28 137	9.94 747	6	23		32
	32	9.66 634	24	9.71 894	31	0.28 106	9.94 740	7	22		28
	36	9.66 658	24	9.71 925	31	0.28 075	9.94 734	6	21		24
			24		30			7			
50	40	9.66 682		9.71 955		0.28 045	9.94 727		20	9	20
	44	9.66 706	24	9.71 986	31	0.28 014	9.94 720	7	19		16
	48	9.66 731	25	9.72 017	31	0.27 983	9.94 714	6	18		12
	52	9.66 755	24	9.72 048	31	0.27 952	9.94 707	7	17		8
	56	9.66 779	24	9.72 079	30	0.27 922	9.94 700	7	16		4
			24		31			6			
51	0	9.66 803		9.72 109		0.27 891	9.94 694		15	9	0
	4	9.66 827	24	9.72 140	31	0.27 860	9.94 687	7	14		56
	8	9.66 851	24	9.72 170	30	0.27 830	9.94 680	7	13		52
	12	9.66 875	24	9.72 201	31	0.27 799	9.94 674	6	12		48
	16	9.66 899	24	9.72 231	30	0.27 769	9.94 667	7	11		44
			23		31			7			
51	20	9.66 922		9.72 262		0.27 738	9.94 660		10	8	40
	24	9.66 946	24	9.72 293	31	0.27 707	9.94 654	6	9		36
	28	9.66 970	24	9.72 323	30	0.27 677	9.94 647	7	8		32
	32	9.66 994	24	9.72 354	31	0.27 646	9.94 640	7	7		28
	36	9.67 018	24	9.72 384	30	0.27 616	9.94 634	6	6		24
			24		31			7			
51	40	9.67 042		9.72 415		0.27 585	9.94 627		5	8	20
	44	9.67 066	24	9.72 445	30	0.27 555	9.94 620	7	4		16
	48	9.67 090	24	9.72 476	31	0.27 524	9.94 614	6	3		12
	52	9.67 113	23	9.72 506	30	0.27 494	9.94 607	7	2		8
	56	9.67 137	24	9.72 537	31	0.27 463	9.94 600	7	1		4
			24		30			7			
52	0	9.67 161		9.72 567		0.27 433	9.94 593		0	8	0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1 <sup>h</sup>			28°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
52	0	0	9.67 161		9.72 567		0.27 433	9.94 593		80	8 0
	4	1	9.67 165	24	9.72 568	31	0.27 402	9.94 587	6	59	56
	8	2	9.67 206	23	9.72 628	30	0.27 372	9.94 580	7	58	52
	12	3	9.67 232	24	9.72 659	31	0.27 341	9.94 573	7	57	48
	16	4	9.67 256	24	9.72 689	30	0.27 311	9.94 567	6	56	44
				24		31			7		
52	20	5	9.67 280		9.72 720		0.27 280	9.94 560		55	7 40
	24	6	9.67 303	23	9.72 750	30	0.27 250	9.94 553	7	54	36
	28	7	9.67 327	24	9.72 780	30	0.27 220	9.94 546	7	53	32
	32	8	9.67 350	23	9.72 811	31	0.27 189	9.94 540	6	52	28
	36	9	9.67 374	24	9.72 841	30	0.27 159	9.94 533	7	51	24
				24		31			7		
52	40	10	9.67 398		9.72 872		0.27 128	9.94 526		50	7 20
	44	11	9.67 421	23	9.72 902	30	0.27 098	9.94 519	7	49	16
	48	12	9.67 445	24	9.72 932	30	0.27 068	9.94 513	6	48	12
	52	13	9.67 468	23	9.72 963	31	0.27 037	9.94 506	7	47	8
	56	14	9.67 492	24	9.72 993	30	0.27 007	9.94 499	7	46	4
				23		30			7		
53	0	15	9.67 515		9.73 023		0.26 977	9.94 492		45	7 0
	4	16	9.67 539	24	9.73 054	31	0.26 946	9.94 485	7	44	56
	8	17	9.67 562	23	9.73 084	30	0.26 916	9.94 479	6	43	52
	12	18	9.67 586	24	9.73 114	30	0.26 886	9.94 472	7	42	48
	16	19	9.67 609	23	9.73 144	30	0.26 856	9.94 465	7	41	44
				24		31			7		
53	20	20	9.67 633		9.73 175		0.26 825	9.94 458		40	6 40
	24	21	9.67 656	23	9.73 205	30	0.26 795	9.94 451	7	39	36
	28	22	9.67 680	24	9.73 235	30	0.26 765	9.94 445	6	38	32
	32	23	9.67 703	23	9.73 265	30	0.26 735	9.94 438	7	37	28
	36	24	9.67 726	23	9.73 295	30	0.26 705	9.94 431	7	36	24
				24		31			7		
53	40	25	9.67 750		9.73 326		0.26 674	9.94 424		35	6 20
	44	26	9.67 773	23	9.73 356	30	0.26 644	9.94 417	7	34	16
	48	27	9.67 796	23	9.73 386	30	0.26 614	9.94 410	7	33	12
	52	28	9.67 820	24	9.73 416	30	0.26 584	9.94 404	6	32	8
	56	29	9.67 843	23	9.73 446	30	0.26 554	9.94 397	7	31	4
				23		30			7		
54	0	30	9.67 866		9.73 476		0.26 524	9.94 390		30	6 0
	4	31	9.67 890	24	9.73 507	31	0.26 493	9.94 383	7	29	56
	8	32	9.67 913	23	9.73 537	30	0.26 463	9.94 376	7	28	52
	12	33	9.67 936	23	9.73 567	30	0.26 433	9.94 369	7	27	48
	16	34	9.67 959	23	9.73 597	30	0.26 403	9.94 362	7	26	44
				23		30			7		
54	20	35	9.67 982		9.73 627		0.26 373	9.94 355		25	5 40
	24	36	9.68 006	24	9.73 657	30	0.26 343	9.94 349	6	24	36
	28	37	9.68 029	23	9.73 687	30	0.26 313	9.94 342	7	23	32
	32	38	9.68 052	23	9.73 717	30	0.26 283	9.94 335	7	22	28
	36	39	9.68 075	23	9.73 747	30	0.26 253	9.94 328	7	21	24
				23		30			7		
54	40	40	9.68 098		9.73 777		0.26 223	9.94 321		20	5 20
	44	41	9.68 121	23	9.73 807	30	0.26 193	9.94 314	7	19	16
	48	42	9.68 144	23	9.73 837	30	0.26 163	9.94 307	7	18	12
	52	43	9.68 167	23	9.73 867	30	0.26 133	9.94 300	7	17	8
	56	44	9.68 190	23	9.73 897	30	0.26 103	9.94 293	7	16	4
				23		30			7		
55	0	45	9.68 213		9.73 927		0.26 073	9.94 286		15	5 0
	4	46	9.68 237	24	9.73 957	30	0.26 043	9.94 279	7	14	56
	8	47	9.68 260	23	9.73 987	30	0.26 013	9.94 273	6	13	52
	12	48	9.68 283	23	9.74 017	30	0.25 983	9.94 266	7	12	48
	16	49	9.68 306	22	9.74 047	30	0.25 953	9.94 259	7	11	44
				23		30			7		
55	20	50	9.68 328		9.74 077		0.25 923	9.94 252		10	4 40
	24	51	9.68 351	23	9.74 107	30	0.25 893	9.94 245	7	9	36
	28	52	9.68 374	23	9.74 137	30	0.25 863	9.94 238	7	8	32
	32	53	9.68 397	23	9.74 166	29	0.25 834	9.94 231	7	7	28
	36	54	9.68 420	23	9.74 196	30	0.25 804	9.94 224	7	6	24
				23		30			7		
55	40	55	9.68 443		9.74 226		0.25 774	9.94 217		5	4 20
	44	56	9.68 466	23	9.74 256	30	0.25 744	9.94 210	7	4	16
	48	57	9.68 489	23	9.74 286	30	0.25 714	9.94 203	7	3	12
	52	58	9.68 512	23	9.74 316	30	0.25 684	9.94 196	7	2	8
	56	59	9.68 534	22	9.74 345	29	0.25 655	9.94 189	7	1	4
				23		30			7		
56	0	60	9.68 557		9.74 376		0.25 625	9.94 182		0	4 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

1°			29°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
56	0	0	9.68 567		9.74 875		0.25 626	9.94 182		00	4 0
	4	1	9.68 580	28	9.74 405	30	0.25 595	9.94 175	7	59	58
	8	2	9.68 593	28	9.74 435	30	0.25 565	9.94 168	7	58	52
	12	3	9.68 605	28	9.74 465	30	0.25 535	9.94 161	7	57	46
	16	4	9.68 618	28	9.74 494	29	0.25 506	9.94 154	7	56	41
				28		30			7		
56	20	5	9.68 671		9.74 524		0.25 476	9.94 147		55	3 40
	24	6	9.68 694	28	9.74 554	30	0.25 446	9.94 140	7	54	36
	28	7	9.68 716	28	9.74 583	29	0.25 417	9.94 133	7	53	32
	32	8	9.68 739	28	9.74 612	30	0.25 387	9.94 126	7	52	28
	36	9	9.68 762	28	9.74 642	30	0.25 357	9.94 119	7	51	24
				22		30			7		
56	40	10	9.68 784		9.74 673		0.25 327	9.94 112		50	3 20
	44	11	9.68 807	28	9.74 702	29	0.25 298	9.94 105	7	49	16
	48	12	9.68 829	28	9.74 732	30	0.25 268	9.94 098	7	48	12
	52	13	9.68 852	28	9.74 762	30	0.25 238	9.94 090	7	47	8
	56	14	9.68 875	28	9.74 791	29	0.25 209	9.94 083	7	46	4
				22		30			7		
57	0	15	9.68 897		9.74 821		0.25 179	9.94 076		45	3 0
	4	16	9.68 920	28	9.74 851	30	0.25 149	9.94 069	7	44	56
	8	17	9.68 942	22	9.74 880	29	0.25 120	9.94 062	7	43	52
	12	18	9.68 965	28	9.74 910	30	0.25 090	9.94 055	7	42	48
	16	19	9.68 987	22	9.74 939	29	0.25 061	9.94 048	7	41	44
				28		30			7		
57	20	20	9.69 010		9.74 969		0.25 031	9.94 041		40	2 40
	24	21	9.69 032	22	9.74 998	29	0.25 002	9.94 034	7	39	36
	28	22	9.69 055	28	9.75 028	30	0.24 972	9.94 027	7	38	32
	32	23	9.69 077	28	9.75 058	30	0.24 942	9.94 020	7	37	28
	36	24	9.69 100	28	9.75 087	29	0.24 913	9.94 012	7	36	24
				22		30			7		
57	40	25	9.69 122		9.75 117		0.24 883	9.94 006		35	2 20
	44	26	9.69 144	22	9.75 146	29	0.24 854	9.93 998	7	34	16
	48	27	9.69 167	28	9.75 176	30	0.24 824	9.93 991	7	33	12
	52	28	9.69 189	22	9.75 206	29	0.24 795	9.93 984	7	32	8
	56	29	9.69 212	28	9.75 235	30	0.24 765	9.93 977	7	31	4
				22		29			7		
58	0	30	9.69 234		9.75 264		0.24 736	9.93 970		30	2 0
	4	31	9.69 256	22	9.75 294	30	0.24 706	9.93 963	7	29	56
	8	32	9.69 279	28	9.75 323	29	0.24 677	9.93 956	7	28	52
	12	33	9.69 301	22	9.75 353	30	0.24 647	9.93 949	7	27	48
	16	34	9.69 323	22	9.75 382	29	0.24 618	9.93 941	7	26	44
				22		29			7		
58	20	35	9.69 345		9.75 411		0.24 589	9.93 934		25	1 40
	24	36	9.69 368	28	9.75 441	30	0.24 559	9.93 927	7	24	36
	28	37	9.69 390	22	9.75 470	29	0.24 530	9.93 920	7	23	32
	32	38	9.69 412	22	9.75 500	30	0.24 500	9.93 912	8	22	28
	36	39	9.69 434	22	9.75 529	29	0.24 471	9.93 905	7	21	24
				22		29			7		
58	40	40	9.69 456		9.75 558		0.24 442	9.93 898		20	1 20
	44	41	9.69 479	28	9.75 588	30	0.24 412	9.93 891	7	19	16
	48	42	9.69 501	22	9.75 617	29	0.24 383	9.93 884	7	18	12
	52	43	9.69 523	22	9.75 647	30	0.24 353	9.93 876	8	17	8
	56	44	9.69 545	22	9.75 676	29	0.24 324	9.93 869	7	16	4
				22		29			7		
59	0	45	9.69 567		9.75 706		0.24 295	9.93 862		15	1 0
	4	46	9.69 589	22	9.75 735	30	0.24 265	9.93 855	7	14	56
	8	47	9.69 611	22	9.75 764	29	0.24 236	9.93 847	8	13	52
	12	48	9.69 633	22	9.75 793	29	0.24 207	9.93 840	7	12	48
	16	49	9.69 655	22	9.75 822	29	0.24 178	9.93 833	7	11	44
				22		30			7		
59	20	50	9.69 677		9.75 852		0.24 148	9.93 826		10	0 40
	24	51	9.69 699	22	9.75 881	29	0.24 119	9.93 819	7	9	36
	28	52	9.69 721	22	9.75 910	29	0.24 090	9.93 811	7	8	32
	32	53	9.69 743	22	9.75 939	29	0.24 061	9.93 804	7	7	28
	36	54	9.69 765	22	9.75 969	30	0.24 031	9.93 797	7	6	24
				22		29			8		
59	40	55	9.69 787		9.75 998		0.24 002	9.93 789		5	0 20
	44	56	9.69 809	22	9.76 027	29	0.23 973	9.93 782	7	4	16
	48	57	9.69 831	22	9.76 056	29	0.23 944	9.93 775	7	3	12
	52	58	9.69 853	22	9.76 086	30	0.23 914	9.93 768	7	2	8
	56	59	9.69 875	22	9.76 115	29	0.23 885	9.93 760	7	1	4
				22		29			7		
00	0	60	9.69 897		9.76 144		0.23 856	9.93 753		0	0 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

$2^h$		$30^\circ$									
m.	s.		L. Sin	d.	L. Tang	c. d.	L. Cotg.	L. Cos.	d.		
0	0	0	9.69 897	22	9.76 144	29	0.23 856	9.93 753	7	60	60 0
	4	1	9.69 919	22	9.76 173	29	0.23 827	9.93 746	8	59	56
	8	2	9.69 941	22	9.76 202	29	0.23 798	9.93 738	7	58	52
	12	3	9.69 963	22	9.76 231	29	0.23 769	9.93 731	7	57	48
	16	4	9.69 984	21	9.76 261	30	0.23 739	9.93 724	7	56	44
				22		29			7		
0	20	5	9.70 006	22	9.76 290	29	0.23 710	9.93 717	8	55	40
	24	6	9.70 028	22	9.76 319	29	0.23 681	9.93 709	7	54	36
	28	7	9.70 050	22	9.76 348	29	0.23 652	9.93 702	7	53	32
	32	8	9.70 072	22	9.76 377	29	0.23 623	9.93 695	7	52	28
	36	9	9.70 093	21	9.76 406	29	0.23 594	9.93 687	7	51	24
				22		29			7		
0	40	10	9.70 115	22	9.76 435	29	0.23 565	9.93 680	7	50	20
	44	11	9.70 137	22	9.76 464	29	0.23 536	9.93 673	7	49	16
	48	12	9.70 159	21	9.76 493	29	0.23 507	9.93 665	7	48	12
	52	13	9.70 180	22	9.76 522	29	0.23 478	9.93 658	7	47	8
	56	14	9.70 202	22	9.76 551	29	0.23 449	9.93 650	7	46	4
				22		29			7		
1	0	15	9.70 224	21	9.76 580	29	0.23 420	9.93 643	7	45	0
	4	16	9.70 245	22	9.76 609	29	0.23 391	9.93 636	7	44	56
	8	17	9.70 267	22	9.76 639	30	0.23 361	9.93 628	7	43	52
	12	18	9.70 288	21	9.76 668	29	0.23 332	9.93 621	7	42	48
	16	19	9.70 310	22	9.76 697	28	0.23 303	9.93 614	7	41	44
				22		29			7		
1	20	20	9.70 332	21	9.76 726	29	0.23 275	9.93 606	7	40	40
	24	21	9.70 353	22	9.76 754	29	0.23 246	9.93 599	7	39	36
	28	22	9.70 375	21	9.76 783	29	0.23 217	9.93 591	7	38	32
	32	23	9.70 396	22	9.76 812	29	0.23 188	9.93 584	7	37	28
	36	24	9.70 418	21	9.76 841	29	0.23 159	9.93 577	7	36	24
				22		29			7		
1	40	25	9.70 439	22	9.76 870	29	0.23 130	9.93 569	7	35	20
	44	26	9.70 461	21	9.76 899	29	0.23 101	9.93 562	7	34	16
	48	27	9.70 482	22	9.76 928	29	0.23 072	9.93 554	7	33	12
	52	28	9.70 504	21	9.76 957	29	0.23 043	9.93 547	7	32	8
	56	29	9.70 525	22	9.76 986	29	0.23 014	9.93 539	7	31	4
				22		29			7		
2	0	30	9.70 547	21	9.77 015	29	0.21 985	9.93 532	7	30	0
	4	31	9.70 568	22	9.77 044	29	0.21 956	9.93 525	7	29	56
	8	32	9.70 590	21	9.77 073	28	0.21 927	9.93 517	7	28	52
	12	33	9.70 611	22	9.77 101	29	0.21 899	9.93 510	7	27	48
	16	34	9.70 633	21	9.77 130	29	0.21 870	9.93 502	7	26	44
				22		29			7		
2	20	35	9.70 654	21	9.77 159	29	0.21 841	9.93 495	8	25	40
	24	36	9.70 675	22	9.77 188	29	0.21 812	9.93 487	7	24	36
	28	37	9.70 697	21	9.77 217	29	0.21 783	9.93 480	7	23	32
	32	38	9.70 718	21	9.77 246	29	0.21 754	9.93 472	7	22	28
	36	39	9.70 739	22	9.77 274	29	0.21 726	9.93 465	7	21	24
				22		29			7		
2	40	40	9.70 761	21	9.77 303	29	0.21 697	9.93 457	7	20	20
	44	41	9.70 782	21	9.77 332	29	0.21 668	9.93 450	7	19	16
	48	42	9.70 803	21	9.77 361	29	0.21 639	9.93 442	7	18	12
	52	43	9.70 824	22	9.77 390	28	0.21 610	9.93 435	7	17	8
	56	44	9.70 846	21	9.77 418	29	0.21 582	9.93 427	7	16	4
				22		29			7		
3	0	45	9.70 867	21	9.77 447	29	0.21 553	9.93 420	7	15	0
	4	46	9.70 888	21	9.77 476	29	0.21 524	9.93 412	7	14	56
	8	47	9.70 909	22	9.77 505	29	0.21 495	9.93 405	7	13	52
	12	48	9.70 931	21	9.77 533	28	0.21 467	9.93 397	7	12	48
	16	49	9.70 952	21	9.77 562	29	0.21 438	9.93 390	7	11	44
				22		29			7		
3	20	50	9.70 973	21	9.77 591	28	0.21 409	9.93 382	7	10	40
	24	51	9.70 994	21	9.77 619	29	0.21 381	9.93 375	7	9	36
	28	52	9.71 015	21	9.77 648	29	0.21 352	9.93 367	7	8	32
	32	53	9.71 036	22	9.77 677	28	0.21 323	9.93 360	7	7	28
	36	54	9.71 058	21	9.77 706	28	0.21 294	9.93 352	7	6	24
				22		28			7		
3	40	55	9.71 079	21	9.77 734	29	0.21 266	9.93 344	7	5	20
	44	56	9.71 100	21	9.77 763	29	0.21 237	9.93 337	7	4	16
	48	57	9.71 121	21	9.77 791	29	0.21 209	9.93 329	7	3	12
	52	58	9.71 142	21	9.77 820	29	0.21 180	9.93 322	7	2	8
	56	59	9.71 163	21	9.77 849	28	0.21 151	9.93 314	7	1	4
				22		28			7		
4	0	60	9.71 184		9.77 877		0.21 123	9.93 307		0	0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>			31°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.			
4	0	0	9.71 184		9.77 877		0.22 123	9.98 307		56	0	
	4	1	9.71 206	21	9.77 906	29	0.22 094	9.98 299	8	56	56	
	8	2	9.71 228	21	9.77 935	29	0.22 065	9.98 291	8	56	52	
	12	3	9.71 247	21	9.77 963	28	0.22 037	9.98 284	7	57	48	
	16	4	9.71 268	21	9.77 992	29	0.22 008	9.98 276	8	56	44	
4	20	5	9.71 289		9.78 020		0.21 980	9.98 269		55	40	
	24	6	9.71 310	21	9.78 049	29	0.21 951	9.98 261	8	54	36	
	28	7	9.71 331	21	9.78 077	28	0.21 923	9.98 253	8	53	32	
	32	8	9.71 352	21	9.78 106	29	0.21 894	9.98 246	7	52	28	
	36	9	9.71 373	21	9.78 135	29	0.21 865	9.98 238	8	51	24	
4	40	10	9.71 393		9.78 163		0.21 837	9.98 230		50	20	
	44	11	9.71 414	21	9.78 192	29	0.21 808	9.98 223	7	49	16	
	48	12	9.71 436	21	9.78 220	28	0.21 780	9.98 215	8	48	12	
	52	13	9.71 456	21	9.78 249	29	0.21 751	9.98 207	8	47	8	
	56	14	9.71 477	21	9.78 277	28	0.21 723	9.98 200	7	46	4	
5	0	15	9.71 498		9.78 306		0.21 694	9.98 192		45	0	
	4	16	9.71 519	21	9.78 334	28	0.21 666	9.98 184	8	44	56	
	8	17	9.71 539	20	9.78 363	29	0.21 637	9.98 177	7	43	52	
	12	18	9.71 560	21	9.78 391	28	0.21 609	9.98 169	8	42	48	
	16	19	9.71 581	21	9.78 419	28	0.21 581	9.98 161	8	41	44	
5	20	20	9.71 602		9.78 448		0.21 552	9.98 154		40	40	
	24	21	9.71 622	20	9.78 476	28	0.21 524	9.98 146	8	39	36	
	28	22	9.71 643	21	9.78 505	29	0.21 495	9.98 138	7	38	32	
	32	23	9.71 664	21	9.78 533	28	0.21 467	9.98 131	8	37	28	
	36	24	9.71 685	20	9.78 562	29	0.21 438	9.98 123	8	36	24	
5	40	25	9.71 706		9.78 590		0.21 410	9.98 115		35	20	
	44	26	9.71 726	21	9.78 618	28	0.21 382	9.98 108	7	34	16	
	48	27	9.71 747	21	9.78 647	29	0.21 353	9.98 100	8	33	12	
	52	28	9.71 767	20	9.78 675	28	0.21 325	9.98 092	8	32	8	
	56	29	9.71 788	21	9.78 704	29	0.21 296	9.98 084	7	31	4	
6	0	30	9.71 809		9.78 732		0.21 268	9.98 077		30	0	
	4	31	9.71 829	20	9.78 760	28	0.21 240	9.98 069	8	29	56	
	8	32	9.71 850	21	9.78 789	29	0.21 211	9.98 061	8	28	52	
	12	33	9.71 870	20	9.78 817	28	0.21 183	9.98 053	8	27	48	
	16	34	9.71 891	21	9.78 845	28	0.21 155	9.98 046	7	26	44	
6	20	35	9.71 911		9.78 874		0.21 126	9.98 038		25	40	
	24	36	9.71 932	21	9.78 902	28	0.21 098	9.98 030	8	24	36	
	28	37	9.71 952	20	9.78 930	28	0.21 070	9.98 022	8	23	32	
	32	38	9.71 973	21	9.78 959	29	0.21 041	9.98 014	8	22	28	
	36	39	9.71 994	21	9.78 987	28	0.21 013	9.98 007	7	21	24	
6	40	40	9.72 014		9.79 015		0.20 985	9.92 999		20	20	
	44	41	9.72 034	20	9.79 043	28	0.20 957	9.92 991	8	19	16	
	48	42	9.72 055	21	9.79 072	29	0.20 928	9.92 983	8	18	12	
	52	43	9.72 075	20	9.79 100	28	0.20 900	9.92 976	7	17	8	
	56	44	9.72 096	21	9.79 128	28	0.20 872	9.92 968	8	16	4	
7	0	45	9.72 116		9.79 156		0.20 844	9.92 960		15	0	
	4	46	9.72 137	21	9.79 185	29	0.20 815	9.92 952	8	14	56	
	8	47	9.72 157	20	9.79 213	28	0.20 787	9.92 944	8	13	52	
	12	48	9.72 177	20	9.79 241	28	0.20 759	9.92 936	8	12	48	
	16	49	9.72 198	21	9.79 269	28	0.20 731	9.92 929	7	11	44	
7	20	50	9.72 218		9.79 297		0.20 703	9.92 921		10	40	
	24	51	9.72 238	20	9.79 326	29	0.20 674	9.92 913	8	9	36	
	28	52	9.72 259	21	9.79 354	28	0.20 646	9.92 905	8	8	32	
	32	53	9.72 279	20	9.79 382	28	0.20 618	9.92 897	8	7	28	
	36	54	9.72 299	20	9.79 410	28	0.20 590	9.92 889	8	6	24	
7	40	55	9.72 320		9.79 438		0.20 562	9.92 881		5	20	
	44	56	9.72 340	20	9.79 466	28	0.20 534	9.92 874	7	4	16	
	48	57	9.72 360	20	9.79 495	29	0.20 505	9.92 866	8	3	12	
	52	58	9.72 381	21	9.79 523	28	0.20 477	9.92 858	8	2	8	
	56	59	9.72 401	20	9.79 551	28	0.20 449	9.92 850	8	1	4	
8	0	60	9.72 421		9.79 579		0.20 421	9.92 842		0	0	
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.	

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2°		32°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
8	0	0	9.72 421		9.79 579		0.20 421	9.92 842		60	62 0
	4	1	9.72 441	20	9.79 607	28	0.20 393	9.92 834	H	59	56
	8	2	9.72 461	20	9.79 635	28	0.20 365	9.92 826	H	58	52
	12	3	9.72 482	21	9.79 663	28	0.20 337	9.92 818	H	57	48
	16	4	9.72 502	20	9.79 691	28	0.20 309	9.92 810	H	56	44
				20		28			H		
8	20	5	9.72 522		9.79 719		0.20 281	9.92 803		55	51 40
	24	6	9.72 542	20	9.79 747	28	0.20 253	9.92 795	H	54	36
	28	7	9.72 562	20	9.79 776	29	0.20 224	9.92 787	H	53	32
	32	8	9.72 582	20	9.79 804	28	0.20 196	9.92 779	H	52	28
	36	9	9.72 602	20	9.79 832	28	0.20 168	9.92 771	H	51	24
				20		28			H		
8	40	10	9.72 622		9.79 860		0.20 140	9.92 763		50	51 20
	44	11	9.72 643	21	9.79 888	28	0.20 112	9.92 755	H	49	16
	48	12	9.72 663	20	9.79 916	28	0.20 084	9.92 747	H	48	12
	52	13	9.72 683	20	9.79 944	28	0.20 056	9.92 739	H	47	8
	56	14	9.72 703	20	9.79 972	28	0.20 028	9.92 731	H	46	4
				20		28			H		
9	0	15	9.72 723		9.80 000		0.20 000	9.92 723		45	61 0
	4	16	9.72 743	20	9.80 028	28	0.19 972	9.92 715	H	44	56
	8	17	9.72 763	20	9.80 056	28	0.19 944	9.92 707	H	43	52
	12	18	9.72 783	20	9.80 084	28	0.19 916	9.92 699	H	42	48
	16	19	9.72 803	20	9.80 112	28	0.19 888	9.92 691	H	41	44
				20		28			H		
9	20	20	9.72 823		9.80 140		0.19 860	9.92 683		40	50 40
	24	21	9.72 843	20	9.80 168	28	0.19 832	9.92 675	H	39	36
	28	22	9.72 863	20	9.80 195	27	0.19 805	9.92 667	H	38	32
	32	23	9.72 883	20	9.80 223	28	0.19 777	9.92 659	H	37	28
	36	24	9.72 902	19	9.80 251	28	0.19 749	9.92 651	H	36	24
				20		28			H		
9	40	25	9.72 922		9.80 279		0.19 721	9.92 643		35	50 20
	44	26	9.72 942	20	9.80 307	28	0.19 693	9.92 635	H	34	16
	48	27	9.72 962	20	9.80 335	28	0.19 665	9.92 627	H	33	12
	52	28	9.72 982	20	9.80 363	28	0.19 637	9.92 619	H	32	8
	56	29	9.73 002	20	9.80 391	28	0.19 609	9.92 611	H	31	4
				20		28			H		
10	0	30	9.73 022		9.80 419		0.19 581	9.92 603		30	50 0
	4	31	9.73 041	19	9.80 447	28	0.19 553	9.92 595	H	29	56
	8	32	9.73 061	20	9.80 474	27	0.19 526	9.92 587	H	28	52
	12	33	9.73 081	20	9.80 502	28	0.19 498	9.92 579	H	27	48
	16	34	9.73 101	20	9.80 530	28	0.19 470	9.92 571	H	26	44
				20		28			H		
10	20	35	9.73 121		9.80 558		0.19 442	9.92 563		25	49 40
	24	36	9.73 140	19	9.80 586	28	0.19 414	9.92 555	H	24	36
	28	37	9.73 160	20	9.80 614	28	0.19 386	9.92 546	H	23	32
	32	38	9.73 180	20	9.80 642	28	0.19 358	9.92 538	H	22	28
	36	39	9.73 200	20	9.80 669	27	0.19 331	9.92 530	H	21	24
				19		28			H		
10	40	40	9.73 219		9.80 697		0.19 303	9.92 522		20	49 20
	44	41	9.73 239		9.80 725	28	0.19 275	9.92 514	H	19	16
	48	42	9.73 259	20	9.80 753	28	0.19 247	9.92 506	H	18	12
	52	43	9.73 278	19	9.80 781	28	0.19 219	9.92 498	H	17	8
	56	44	9.73 298	20	9.80 808	27	0.19 192	9.92 490	H	16	4
				20		28			H		
11	0	45	9.73 318		9.80 836		0.19 164	9.92 482		15	49 0
	4	46	9.73 337	19	9.80 864	28	0.19 136	9.92 473	H	14	56
	8	47	9.73 357	20	9.80 892	28	0.19 108	9.92 465	H	13	52
	12	48	9.73 377	20	9.80 919	27	0.19 081	9.92 457	H	12	48
	16	49	9.73 396	19	9.80 947	28	0.19 053	9.92 449	H	11	44
				20		28			H		
11	20	50	9.73 416		9.80 975		0.19 025	9.92 441		10	48 40
	24	51	9.73 436	19	9.81 003	28	0.18 997	9.92 433	H	9	36
	28	52	9.73 455	20	9.81 030	27	0.18 970	9.92 425	H	8	32
	32	53	9.73 474	19	9.81 058	28	0.18 942	9.92 416	H	7	28
	36	54	9.73 494	20	9.81 086	28	0.18 914	9.92 408	H	6	24
				19		27			H		
11	40	55	9.73 513		9.81 113		0.18 887	9.92 400		5	48 20
	44	56	9.73 533	20	9.81 141	28	0.18 859	9.92 392	H	4	16
	48	57	9.73 552	19	9.81 169	28	0.18 831	9.92 384	H	3	12
	52	58	9.73 572	20	9.81 196	27	0.18 804	9.92 376	H	2	8
	56	59	9.73 591	19	9.81 224	28	0.18 776	9.92 367	H	1	4
				20		28			H		
12	0	60	9.73 611		9.81 252		0.18 748	9.92 359		0	48 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21. — Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>			33°								
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
12	0	0	9.78 611		9.81 252		0.18 748	9.92 350		60	45 0
	4	1	9.78 630	19	9.81 279	27	0.18 721	9.92 351	8	59	55
	8	2	9.78 650	20	9.81 307	28	0.18 693	9.92 343	8	58	50
	12	3	9.78 669	19	9.81 335	28	0.18 665	9.92 335	9	57	45
	16	4	9.78 689	20	9.81 362	27	0.18 638	9.92 326	9	56	44
				19		28			8		
12	20	5	9.78 708		9.81 390		0.18 610	9.92 318		55	47 40
	24	6	9.78 727	19	9.81 418	28	0.18 582	9.92 310	8	54	35
	28	7	9.78 747	20	9.81 446	27	0.18 555	9.92 302	8	53	30
	32	8	9.78 766	19	9.81 473	28	0.18 527	9.92 293	9	52	25
	36	9	9.78 785	19	9.81 500	27	0.18 500	9.92 286	8	51	24
				20		28			8		
12	40	10	9.78 805		9.81 528		0.18 472	9.92 277		50	47 20
	44	11	9.78 824	19	9.81 556	28	0.18 444	9.92 269	8	49	15
	48	12	9.78 843	19	9.81 583	27	0.18 417	9.92 260	9	48	12
	52	13	9.78 863	20	9.81 611	28	0.18 389	9.92 252	8	47	8
	56	14	9.78 882	19	9.81 638	27	0.18 362	9.92 244	9	46	4
				19		28			9		
12	0	15	9.78 901		9.81 666		0.18 334	9.92 235		45	47 0
	4	16	9.78 921	20	9.81 693	27	0.18 307	9.92 227	8	44	55
	8	17	9.78 940	19	9.81 721	28	0.18 279	9.92 219	8	43	52
	12	18	9.78 959	19	9.81 748	27	0.18 252	9.92 211	8	42	48
	16	19	9.78 978	19	9.81 776	28	0.18 224	9.92 202	9	41	44
				19		27			8		
12	20	20	9.78 997		9.81 803		0.18 197	9.92 194		40	46 40
	24	21	9.79 017	20	9.81 831	28	0.18 169	9.92 186	8	39	35
	28	22	9.79 036	19	9.81 858	27	0.18 142	9.92 177	9	38	32
	32	23	9.79 055	19	9.81 886	28	0.18 114	9.92 169	8	37	28
	36	24	9.79 074	19	9.81 913	27	0.18 087	9.92 161	9	36	24
				19		28			9		
12	40	25	9.79 093		9.81 941		0.18 059	9.92 152		35	46 20
	44	26	9.79 113	20	9.81 968	27	0.18 032	9.92 144	8	34	15
	48	27	9.79 132	19	9.81 996	28	0.18 004	9.92 136	8	33	12
	52	28	9.79 151	19	9.82 023	27	0.17 977	9.92 127	9	32	8
	56	29	9.79 170	19	9.82 051	28	0.17 949	9.92 119	8	31	4
				19		27			8		
12	0	30	9.79 189		9.82 078		0.17 922	9.92 111		30	46 0
	4	31	9.79 208	19	9.82 106	28	0.17 894	9.92 102	9	29	55
	8	32	9.79 227	19	9.82 133	27	0.17 867	9.92 094	8	28	52
	12	33	9.79 246	19	9.82 161	28	0.17 839	9.92 086	8	27	48
	16	34	9.79 265	19	9.82 188	27	0.17 812	9.92 077	9	26	44
				19		27			8		
12	20	35	9.79 284		9.82 215		0.17 785	9.92 069		25	46 40
	24	36	9.79 303	19	9.82 243	28	0.17 757	9.92 060	9	24	35
	28	37	9.79 322	19	9.82 270	27	0.17 730	9.92 052	8	23	32
	32	38	9.79 341	19	9.82 298	28	0.17 702	9.92 044	8	22	28
	36	39	9.79 360	19	9.82 325	27	0.17 675	9.92 035	9	21	24
				19		27			8		
12	40	40	9.79 379		9.82 352		0.17 648	9.92 027		20	45 20
	44	41	9.79 398	19	9.82 380	28	0.17 620	9.92 018	9	19	15
	48	42	9.79 417	19	9.82 407	27	0.17 593	9.92 010	8	18	12
	52	43	9.79 436	19	9.82 435	28	0.17 565	9.92 002	8	17	8
	56	44	9.79 455	19	9.82 462	27	0.17 538	9.91 993	9	16	4
				19		27			8		
12	0	45	9.79 474		9.82 489		0.17 511	9.91 985		15	45 0
	4	46	9.79 493	19	9.82 517	28	0.17 483	9.91 976	9	14	55
	8	47	9.79 512	19	9.82 544	27	0.17 456	9.91 968	8	13	52
	12	48	9.79 531	19	9.82 571	27	0.17 429	9.91 959	9	12	48
	16	49	9.79 549	18	9.82 599	28	0.17 401	9.91 951	8	11	44
				19		27			9		
12	20	50	9.79 568		9.82 626		0.17 374	9.91 942		10	44 40
	24	51	9.79 587	19	9.82 653	27	0.17 347	9.91 934	8	9	35
	28	52	9.79 606	19	9.82 681	28	0.17 319	9.91 925	9	8	32
	32	53	9.79 625	19	9.82 708	27	0.17 292	9.91 917	8	7	28
	36	54	9.79 644	19	9.82 735	27	0.17 265	9.91 908	9	6	24
				18		27			8		
12	40	55	9.79 662		9.82 762		0.17 238	9.91 900		5	44 20
	44	56	9.79 681	19	9.82 790	28	0.17 210	9.91 891	9	4	15
	48	57	9.79 700	19	9.82 817	27	0.17 183	9.91 883	8	3	12
	52	58	9.79 719	19	9.82 844	27	0.17 156	9.91 874	9	2	8
	56	59	9.79 737	18	9.82 871	27	0.17 129	9.91 866	8	1	4
				19		28			9		
12	0	60	9.79 756		9.82 899		0.17 101	9.91 857		0	44 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>		34°									
m	s.		L. Sin.	d.	L. Tang	c. d.	L. Cotg	L. Cos.	d.		
16	0	0	9 74 755		9.82 899		0.17 101	9.91 857		60	44 0
	4	1	9 74 775	19	9.82 926	27	0.17 074	9.91 849	8	59	56
	8	2	9 74 794	19	9.82 953	27	0.17 047	9.91 840	8	58	52
	12	3	9 74 812	18	9.82 980	27	0.17 020	9.91 832	8	57	48
	16	4	9 74 831	19	9.83 008	28	0.16 992	9.91 823	8	56	44
				19		27			8		
16	20	5	9 74 850		9.83 035		0.16 965	9.91 815		55	43 40
	24	6	9 74 868	18	9.83 062	27	0.16 938	9.91 806	8	54	36
	28	7	9 74 887	19	9.83 089	27	0.16 911	9.91 798	8	53	32
	32	8	9 74 906	19	9.83 117	28	0.16 883	9.91 789	8	52	28
	36	9	9 74 924	18	9.83 144	27	0.16 856	9.91 781	8	51	24
				19		27			9		
16	40	10	9 74 943		9.83 171		0.16 829	9.91 772		50	43 20
	44	11	9 74 961	18	9.83 198	27	0.16 802	9.91 763	8	49	16
	48	12	9 74 980	19	9.83 225	27	0.16 775	9.91 755	8	48	12
	52	13	9 74 999	19	9.83 252	27	0.16 748	9.91 746	8	47	8
	56	14	9 75 017	18	9.83 280	28	0.16 720	9.91 738	8	46	4
				19		27			8		
17	0	15	9 75 036		9.83 307		0.16 693	9.91 729		45	43 0
	4	16	9 75 054	18	9.83 334	27	0.16 666	9.91 720	8	44	56
	8	17	9 75 073	19	9.83 361	27	0.16 639	9.91 712	8	43	52
	12	18	9 75 091	18	9.83 388	27	0.16 612	9.91 703	8	42	48
	16	19	9 75 110	19	9.83 415	27	0.16 585	9.91 695	8	41	44
				18		27			8		
17	20	20	9 75 128		9.83 442		0.16 558	9.91 686		40	42 40
	24	21	9 75 147	19	9.83 470	28	0.16 530	9.91 677	8	39	36
	28	22	9 75 165	18	9.83 497	27	0.16 503	9.91 669	8	38	32
	32	23	9 75 184	19	9.83 524	27	0.16 476	9.91 660	8	37	28
	36	24	9 75 202	18	9.83 551	27	0.16 449	9.91 651	8	36	24
				19		27			8		
17	40	25	9 75 221		9.83 578		0.16 422	9.91 643		35	42 20
	44	26	9 75 239	18	9.83 605	27	0.16 395	9.91 634	8	34	16
	48	27	9 75 258	19	9.83 632	27	0.16 368	9.91 625	8	33	12
	52	28	9 75 276	18	9.83 659	27	0.16 341	9.91 617	8	32	8
	56	29	9 75 294	19	9.83 686	27	0.16 314	9.91 608	8	31	4
				19		27			8		
18	0	30	9 75 313		9.83 713		0.16 287	9.91 599		30	42 0
	4	31	9 75 331	18	9.83 740	27	0.16 260	9.91 591	8	29	56
	8	32	9 75 350	19	9.83 768	28	0.16 232	9.91 582	8	28	52
	12	33	9 75 368	18	9.83 795	27	0.16 205	9.91 573	8	27	48
	16	34	9 75 386	19	9.83 822	27	0.16 178	9.91 565	8	26	44
				19		27			8		
18	20	35	9 75 405		9.83 849		0.16 151	9.91 556		25	41 40
	24	36	9 75 423	18	9.83 876	27	0.16 124	9.91 547	8	24	36
	28	37	9 75 441	19	9.83 903	27	0.16 097	9.91 538	8	23	32
	32	38	9 75 459	18	9.83 930	27	0.16 070	9.91 530	8	22	28
	36	39	9 75 478	19	9.83 957	27	0.16 043	9.91 521	8	21	24
				18		27			8		
18	40	40	9 75 496		9.83 984		0.16 016	9.91 512		20	41 20
	44	41	9 75 514	18	9.84 011	27	0.15 989	9.91 504	8	19	16
	48	42	9 75 533	19	9.84 038	27	0.15 962	9.91 495	8	18	12
	52	43	9 75 551	18	9.84 065	27	0.15 935	9.91 486	8	17	8
	56	44	9 75 569	19	9.84 092	27	0.15 908	9.91 477	8	16	4
				18		27			8		
19	0	45	9 75 587		9.84 119		0.15 881	9.91 469		15	41 0
	4	46	9 75 605	18	9.84 146	27	0.15 854	9.91 460	8	14	56
	8	47	9 75 624	19	9.84 173	27	0.15 827	9.91 451	8	13	52
	12	48	9 75 642	18	9.84 200	27	0.15 800	9.91 442	8	12	48
	16	49	9 75 660	19	9.84 227	27	0.15 773	9.91 433	8	11	44
				18		27			8		
19	20	50	9 75 678		9.84 254		0.15 746	9.91 425		10	40 40
	24	51	9 75 696	18	9.84 280	26	0.15 720	9.91 416	8	9	36
	28	52	9 75 714	19	9.84 307	27	0.15 693	9.91 407	8	8	32
	32	53	9 75 733	18	9.84 334	27	0.15 666	9.91 398	8	7	28
	36	54	9 75 751	19	9.84 361	27	0.15 639	9.91 389	8	6	24
				18		27			8		
19	40	55	9 75 769		9.84 388		0.15 612	9.91 381		5	40 20
	44	56	9 75 787	18	9.84 415	27	0.15 585	9.91 372	8	4	16
	48	57	9 75 805	19	9.84 442	27	0.15 558	9.91 363	8	3	12
	52	58	9 75 823	18	9.84 469	27	0.15 531	9.91 354	8	2	8
	56	59	9 75 841	19	9.84 496	27	0.15 504	9.91 345	8	1	4
				18		27			8		
20	0	60	9 75 859		9.84 523		0.15 477	9.91 336		0	40 0
			L. Cos.	d.	L. Cotg	c. d.	L. Tang	L. Sin.	d.		m s.



TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2°		35°									
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
20	0	0	9.75 859		9.84 523		0.15 477	9.91 336		60	40 0
	4	1	9.75 877	18	9.84 550	27	0.15 450	9.91 328	8	59	36
	8	2	9.75 896	18	9.84 576	26	0.15 424	9.91 319	9	58	32
	12	3	9.75 913	18	9.84 603	27	0.15 397	9.91 310	9	57	28
	16	4	9.75 931	18	9.84 630	27	0.15 370	9.91 301	9	56	24
				18		27			9		
20	20	5	9.75 949		9.84 657		0.15 343	9.91 292		55	20 40
	24	6	9.75 967	18	9.84 684	27	0.15 316	9.91 283	9	54	36
	28	7	9.75 986	18	9.84 711	27	0.15 289	9.91 274	9	53	32
	32	8	9.76 003	18	9.84 738	27	0.15 262	9.91 266	8	52	28
	36	9	9.76 021	18	9.84 764	26	0.15 236	9.91 257	9	51	24
				18		27			9		
20	40	10	9.76 039		9.84 791		0.15 209	9.91 248		50	20 20
	44	11	9.76 057	18	9.84 818	27	0.15 182	9.91 239	9	49	16
	48	12	9.76 076	18	9.84 845	27	0.15 155	9.91 230	9	48	12
	52	13	9.76 093	18	9.84 872	27	0.15 128	9.91 221	9	47	8
	56	14	9.76 111	18	9.84 899	27	0.15 101	9.91 212	9	46	4
				18		26			9		
21	0	15	9.76 129		9.84 925		0.15 075	9.91 203		45	20 0
	4	16	9.76 146	17	9.84 952	27	0.15 048	9.91 194	9	44	56
	8	17	9.76 164	18	9.84 979	27	0.15 021	9.91 185	9	43	52
	12	18	9.76 182	18	9.85 006	27	0.14 994	9.91 176	9	42	48
	16	19	9.76 200	18	9.85 033	27	0.14 967	9.91 167	9	41	44
				18		26			9		
21	20	20	9.76 218		9.85 059		0.14 941	9.91 158		40	20 40
	24	21	9.76 236	18	9.85 086	27	0.14 914	9.91 149	9	39	36
	28	22	9.76 253	17	9.85 113	27	0.14 887	9.91 141	8	38	32
	32	23	9.76 271	18	9.85 140	27	0.14 860	9.91 132	9	37	28
	36	24	9.76 289	18	9.85 166	26	0.14 834	9.91 123	9	36	24
				18		27			9		
21	40	25	9.76 307		9.85 193		0.14 807	9.91 114		35	20 20
	44	26	9.76 324	17	9.85 220	27	0.14 780	9.91 105	9	34	16
	48	27	9.76 342	18	9.85 247	27	0.14 753	9.91 096	9	33	12
	52	28	9.76 360	18	9.85 273	26	0.14 727	9.91 087	9	32	8
	56	29	9.76 378	18	9.85 300	27	0.14 700	9.91 078	9	31	4
				17		27			9		
22	0	30	9.76 396		9.85 327		0.14 673	9.91 069		30	20 0
	4	31	9.76 413	18	9.85 354	27	0.14 646	9.91 060	9	29	56
	8	32	9.76 431	18	9.85 380	26	0.14 620	9.91 051	9	28	52
	12	33	9.76 448	17	9.85 407	27	0.14 593	9.91 042	9	27	48
	16	34	9.76 466	18	9.85 434	27	0.14 566	9.91 033	9	26	44
				18		26			10		
22	20	35	9.76 484		9.85 460		0.14 540	9.91 023		25	20 40
	24	36	9.76 501	17	9.85 487	27	0.14 513	9.91 014	9	24	36
	28	37	9.76 519	18	9.85 514	27	0.14 486	9.91 005	9	23	32
	32	38	9.76 537	18	9.85 540	26	0.14 460	9.90 996	9	22	28
	36	39	9.76 554	17	9.85 567	27	0.14 433	9.90 987	9	21	24
				18		27			9		
22	40	40	9.76 572		9.85 594		0.14 406	9.90 978		20	20 20
	44	41	9.76 590	18	9.85 620	26	0.14 380	9.90 969	9	19	16
	48	42	9.76 607	17	9.85 647	27	0.14 353	9.90 960	9	18	12
	52	43	9.76 625	18	9.85 674	27	0.14 326	9.90 951	9	17	8
	56	44	9.76 642	17	9.85 700	26	0.14 300	9.90 942	9	16	4
				18		27			9		
23	0	45	9.76 660		9.85 727		0.14 273	9.90 933		15	20 0
	4	46	9.76 677	17	9.85 754	27	0.14 246	9.90 924	9	14	56
	8	47	9.76 696	18	9.85 780	26	0.14 220	9.90 915	9	13	52
	12	48	9.76 712	17	9.85 807	27	0.14 193	9.90 906	9	12	48
	16	49	9.76 730	18	9.85 834	27	0.14 166	9.90 896	10	11	44
				17		26			9		
23	20	50	9.76 747		9.85 860		0.14 140	9.90 887		10	20 40
	24	51	9.76 765	18	9.85 887	27	0.14 113	9.90 878	9	9	36
	28	52	9.76 782	17	9.85 913	26	0.14 087	9.90 869	9	8	32
	32	53	9.76 800	18	9.85 940	27	0.14 060	9.90 860	9	7	28
	36	54	9.76 817	17	9.85 967	27	0.14 033	9.90 851	9	6	24
				18		26			9		
23	40	55	9.76 835		9.85 993		0.14 007	9.90 842		5	20 20
	44	56	9.76 852	17	9.86 020	27	0.13 980	9.90 832	10	4	16
	48	57	9.76 870	18	9.86 046	26	0.13 954	9.90 823	9	3	12
	52	58	9.76 887	17	9.86 073	27	0.13 927	9.90 814	9	2	8
	56	59	9.76 904	17	9.86 100	27	0.13 900	9.90 805	9	1	4
				18		26			9		
24	0	60	9.76 922		9.86 126		0.13 874	9.90 796		0	20 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>d</sup>			36°								
m.	κ.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
24	0	0	9.76 922	17	9.86 126	27	0.13 874	9.90 796	9	80	35 0
	4	1	9.76 939	18	9.86 153	26	0.13 847	9.90 787	10	58	56
	8	2	9.76 957	17	9.86 179	27	0.13 821	9.90 777	9	58	52
	12	3	9.76 974	17	9.86 206	26	0.13 794	9.90 768	9	57	48
	16	4	9.76 991	18	9.86 232	27	0.13 768	9.90 759	9	56	44
24	20	5	9.77 009	17	9.86 259	26	0.13 741	9.90 750	9	55	35 40
	24	6	9.77 026	17	9.86 286	27	0.13 715	9.90 741	10	54	36
	28	7	9.77 043	18	9.86 312	26	0.13 688	9.90 731	9	53	32
	32	8	9.77 061	17	9.86 338	27	0.13 662	9.90 722	9	52	28
	36	9	9.77 078	17	9.86 365	27	0.13 635	9.90 713	9	51	24
24	40	10	9.77 095	17	9.86 392	26	0.13 608	9.90 704	10	50	35 20
	44	11	9.77 112	18	9.86 418	27	0.13 582	9.90 694	9	49	16
	48	12	9.77 130	17	9.86 445	26	0.13 555	9.90 685	9	48	12
	52	13	9.77 147	17	9.86 471	27	0.13 529	9.90 676	9	47	8
	56	14	9.77 164	17	9.86 498	26	0.13 502	9.90 667	10	46	4
25	0	15	9.77 181	18	9.86 524	27	0.13 476	9.90 657	9	45	35 0
	4	16	9.77 199	17	9.86 551	26	0.13 449	9.90 648	9	44	56
	8	17	9.77 216	17	9.86 577	26	0.13 423	9.90 639	9	43	52
	12	18	9.77 233	17	9.86 603	27	0.13 397	9.90 630	10	42	48
	16	19	9.77 250	18	9.86 630	26	0.13 370	9.90 620	9	41	44
25	20	20	9.77 268	17	9.86 656	27	0.13 344	9.90 611	9	40	34 40
	24	21	9.77 285	17	9.86 683	26	0.13 317	9.90 602	10	39	36
	28	22	9.77 302	17	9.86 709	27	0.13 291	9.90 592	9	38	32
	32	23	9.77 319	17	9.86 736	26	0.13 264	9.90 583	9	37	28
	36	24	9.77 336	17	9.86 762	27	0.13 238	9.90 574	9	36	24
25	40	25	9.77 353	17	9.86 789	26	0.13 211	9.90 565	10	35	34 20
	44	26	9.77 370	17	9.86 815	27	0.13 185	9.90 556	9	34	16
	48	27	9.77 387	18	9.86 842	26	0.13 158	9.90 546	9	33	12
	52	28	9.77 405	17	9.86 868	26	0.13 132	9.90 537	10	32	8
	56	29	9.77 422	17	9.86 894	27	0.13 106	9.90 527	9	31	4
26	0	30	9.77 439	17	9.86 921	26	0.13 079	9.90 518	9	30	34 0
	4	31	9.77 456	17	9.86 947	27	0.13 053	9.90 509	10	29	56
	8	32	9.77 473	17	9.86 974	26	0.13 026	9.90 499	9	28	52
	12	33	9.77 490	17	9.87 000	27	0.13 000	9.90 490	10	27	48
	16	34	9.77 507	17	9.87 027	26	0.12 973	9.90 480	9	26	44
26	20	35	9.77 524	17	9.87 053	26	0.12 947	9.90 471	9	25	33 40
	24	36	9.77 541	17	9.87 079	27	0.12 921	9.90 462	10	24	36
	28	37	9.77 558	17	9.87 106	26	0.12 894	9.90 452	9	23	32
	32	38	9.77 575	17	9.87 132	26	0.12 868	9.90 443	9	22	28
	36	39	9.77 592	17	9.87 158	27	0.12 842	9.90 434	10	21	24
26	40	40	9.77 609	17	9.87 185	26	0.12 815	9.90 424	9	20	33 20
	44	41	9.77 626	17	9.87 211	27	0.12 789	9.90 415	10	19	16
	48	42	9.77 643	17	9.87 238	26	0.12 762	9.90 406	9	18	12
	52	43	9.77 660	17	9.87 264	26	0.12 736	9.90 396	10	17	8
	56	44	9.77 677	17	9.87 290	27	0.12 710	9.90 386	9	16	4
27	0	45	9.77 694	17	9.87 317	26	0.12 683	9.90 377	9	15	33 0
	4	46	9.77 711	17	9.87 343	26	0.12 657	9.90 368	10	14	56
	8	47	9.77 728	16	9.87 369	27	0.12 631	9.90 358	9	13	52
	12	48	9.77 744	17	9.87 396	26	0.12 604	9.90 349	9	12	48
	16	49	9.77 761	17	9.87 422	26	0.12 578	9.90 339	10	11	44
27	20	50	9.77 778	17	9.87 448	27	0.12 552	9.90 330	9	10	32 40
	24	51	9.77 795	17	9.87 475	26	0.12 525	9.90 320	9	9	36
	28	52	9.77 812	17	9.87 501	26	0.12 499	9.90 311	9	8	32
	32	53	9.77 829	17	9.87 527	27	0.12 473	9.90 301	10	7	28
	36	54	9.77 846	16	9.87 554	26	0.12 446	9.90 292	9	6	24
27	40	55	9.77 862	17	9.87 580	26	0.12 420	9.90 282	9	5	32 20
	44	56	9.77 879	17	9.87 606	27	0.12 394	9.90 273	10	4	16
	48	57	9.77 896	17	9.87 633	26	0.12 367	9.90 263	9	3	12
	52	58	9.77 913	17	9.87 659	26	0.12 341	9.90 254	10	2	8
	56	59	9.77 930	16	9.87 685	26	0.12 315	9.90 244	9	1	4
28	0	60	9.77 946		9.87 711		0.12 289	9.90 235		0	32 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. κ.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2°		37°									
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
28	0	0	9.77 946		9.87 711		0.12 289	9.90 235		60	32 0
	4	1	9.77 963	17	9.87 738	27	0.12 262	9.90 225	10	59	56
	8	2	9.77 980	17	9.87 764	26	0.12 236	9.90 216	9	58	52
	12	3	9.77 997	17	9.87 790	26	0.12 210	9.90 206	10	57	48
	16	4	9.78 013	16	9.87 817	27	0.12 183	9.90 197	9	56	44
				17		26			10		
28	20	5	9.78 030		9.87 843		0.12 157	9.90 187		55	31 40
	24	6	9.78 047	17	9.87 869	26	0.12 131	9.90 178	9	54	36
	28	7	9.78 063	16	9.87 896	26	0.12 105	9.90 168	10	53	32
	32	8	9.78 080	17	9.87 922	27	0.12 078	9.90 159	9	52	28
	36	9	9.78 097	17	9.87 948	26	0.12 052	9.90 149	10	51	24
				16		26			10		
28	40	10	9.78 113		9.87 974		0.12 026	9.90 139		50	31 30
	44	11	9.78 130	17	9.88 000	26	0.12 000	9.90 130	9	49	26
	48	12	9.78 147	17	9.88 027	27	0.11 973	9.90 120	10	48	22
	52	13	9.78 163	16	9.88 053	26	0.11 947	9.90 111	9	47	18
	56	14	9.78 180	17	9.88 079	26	0.11 921	9.90 101	10	46	14
				17		26			10		
29	0	15	9.78 197		9.88 105		0.11 895	9.90 091		45	31 0
	4	16	9.78 213	16	9.88 131	26	0.11 869	9.90 082	9	44	56
	8	17	9.78 230	17	9.88 158	27	0.11 843	9.90 072	10	43	52
	12	18	9.78 246	16	9.88 184	26	0.11 818	9.90 063	9	42	48
	16	19	9.78 263	17	9.88 210	26	0.11 790	9.90 053	10	41	44
				17		26			10		
29	20	20	9.78 280		9.88 236		0.11 764	9.90 043		40	30 40
	24	21	9.78 296	16	9.88 262	26	0.11 738	9.90 034	9	39	36
	28	22	9.78 313	17	9.88 289	27	0.11 711	9.90 024	10	38	32
	32	23	9.78 329	16	9.88 315	26	0.11 685	9.90 014	9	37	28
	36	24	9.78 346	17	9.88 341	26	0.11 659	9.90 006	10	36	24
				16		26			10		
29	40	25	9.78 362		9.88 367		0.11 633	9.89 995		35	30 30
	44	26	9.78 379	17	9.88 393	26	0.11 607	9.89 985	10	34	26
	48	27	9.78 396	16	9.88 420	27	0.11 580	9.89 976	9	33	22
	52	28	9.78 412	17	9.88 446	26	0.11 554	9.89 966	10	32	18
	56	29	9.78 428	16	9.88 472	26	0.11 528	9.89 956	9	31	14
				17		26			9		
30	0	30	9.78 445		9.88 498		0.11 502	9.89 947		30	30 0
	4	31	9.78 461	16	9.88 524	26	0.11 476	9.89 937	10	29	56
	8	32	9.78 478	17	9.88 550	26	0.11 450	9.89 927	10	28	52
	12	33	9.78 494	16	9.88 577	27	0.11 423	9.89 918	9	27	48
	16	34	9.78 510	17	9.88 603	26	0.11 397	9.89 908	10	26	44
				17		26			10		
30	20	35	9.78 527		9.88 629		0.11 371	9.89 898		25	29 40
	24	36	9.78 543	16	9.88 655	26	0.11 345	9.89 888	10	24	36
	28	37	9.78 560	17	9.88 681	26	0.11 319	9.89 879	9	23	32
	32	38	9.78 576	16	9.88 707	26	0.11 293	9.89 869	10	22	28
	36	39	9.78 592	17	9.88 733	26	0.11 267	9.89 859	9	21	24
				17		26			10		
30	40	40	9.78 609		9.88 759		0.11 241	9.89 849		20	29 30
	44	41	9.78 625	16	9.88 786	27	0.11 214	9.89 840	9	19	26
	48	42	9.78 642	17	9.88 812	26	0.11 188	9.89 830	10	18	22
	52	43	9.78 658	16	9.88 838	26	0.11 162	9.89 820	9	17	18
	56	44	9.78 674	17	9.88 864	26	0.11 136	9.89 810	10	16	14
				17		26			9		
31	0	45	9.78 691		9.88 890		0.11 110	9.89 801		15	29 0
	4	46	9.78 707	16	9.88 916	26	0.11 084	9.89 791	10	14	56
	8	47	9.78 723	17	9.88 942	26	0.11 058	9.89 781	9	13	52
	12	48	9.78 739	16	9.88 968	26	0.11 032	9.89 771	10	12	48
	16	49	9.78 756	17	9.88 994	26	0.11 006	9.89 761	9	11	44
				16		26			10		
31	20	50	9.78 772		9.89 020		0.10 980	9.89 752		10	28 40
	24	51	9.78 788	16	9.89 046	26	0.10 954	9.89 742	9	9	36
	28	52	9.78 805	17	9.89 073	27	0.10 927	9.89 732	10	8	32
	32	53	9.78 821	16	9.89 099	26	0.10 901	9.89 722	9	7	28
	36	54	9.78 837	17	9.89 125	26	0.10 875	9.89 712	10	6	24
				16		26			10		
31	40	55	9.78 853		9.89 151		0.10 849	9.89 702		5	28 20
	44	56	9.78 869	17	9.89 177	26	0.10 823	9.89 693	9	4	16
	48	57	9.78 886	16	9.89 203	26	0.10 797	9.89 683	10	3	12
	52	58	9.78 902	17	9.89 229	26	0.10 771	9.89 673	9	2	8
	56	59	9.78 918	16	9.89 255	26	0.10 745	9.89 663	10	1	4
				16		26			10		
32	0	60	9.78 934		9.89 281		0.10 719	9.89 653		0	28 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>h</sup>				38°							
m.	s.		L. Sin	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
32	0	0	9.78 934		9.89 281		0.10 719	9.89 653		60	28 0
	4	1	9.78 950	16	9.89 307	26	0.10 693	9.89 643	10	59	56
	8	2	9.78 967	17	9.89 333	26	0.10 667	9.89 633	10	58	52
	12	3	9.78 983	16	9.89 359	26	0.10 641	9.89 624	9	57	48
	16	4	9.78 999	16	9.89 386	26	0.10 615	9.89 614	10	56	44
				16		26			10		
32	20	5	9.79 015		9.89 411		0.10 589	9.89 604		55	27 40
	24	6	9.79 031	16	9.89 437	26	0.10 563	9.89 594	10	54	36
	28	7	9.79 047	16	9.89 463	26	0.10 537	9.89 584	10	53	32
	32	8	9.79 063	16	9.89 489	26	0.10 511	9.89 574	10	52	28
	36	9	9.79 079	16	9.89 515	26	0.10 485	9.89 564	10	51	24
				16		26			10		
32	40	10	9.79 096		9.89 541		0.10 459	9.89 554		50	27 20
	44	11	9.79 111	16	9.89 567	20	0.10 433	9.89 544	10	49	16
	48	12	9.79 128	17	9.89 593	26	0.10 407	9.89 534	10	48	12
	52	13	9.79 144	16	9.89 619	26	0.10 381	9.89 524	10	47	8
	56	14	9.79 160	16	9.89 645	26	0.10 355	9.89 514	10	46	4
				16		26			10		
33	0	15	9.79 176		9.89 671		0.10 329	9.89 504		45	27 0
	4	16	9.79 192	16	9.89 697	26	0.10 303	9.89 495	9	44	56
	8	17	9.79 208	16	9.89 723	26	0.10 277	9.89 485	10	43	52
	12	18	9.79 224	16	9.89 749	26	0.10 251	9.89 475	10	42	48
	16	19	9.79 240	16	9.89 775	26	0.10 225	9.89 465	10	41	44
				16		26			10		
33	20	20	9.79 256		9.89 801		0.10 199	9.89 455		40	26 40
	24	21	9.79 272	16	9.89 827	26	0.10 173	9.89 445	10	39	36
	28	22	9.79 288	16	9.89 853	26	0.10 147	9.89 435	10	38	32
	32	23	9.79 304	16	9.89 879	26	0.10 121	9.89 425	10	37	28
	36	24	9.79 319	15	9.89 905	26	0.10 095	9.89 415	10	36	24
				16		26			10		
33	40	25	9.79 335		9.89 931		0.10 069	9.89 405		35	26 20
	44	26	9.79 351	16	9.89 957	26	0.10 043	9.89 395	10	34	16
	48	27	9.79 367	16	9.89 983	26	0.10 017	9.89 385	10	33	12
	52	28	9.79 383	16	9.90 009	26	0.09 991	9.89 375	10	32	8
	56	29	9.79 399	16	9.90 035	26	0.09 965	9.89 364	11	31	4
				16		26			10		
34	0	30	9.79 415		9.90 061		0.09 939	9.89 354		30	26 0
	4	31	9.79 431	10	9.90 086	25	0.09 914	9.89 344	10	29	56
	8	32	9.79 447	16	9.90 112	26	0.09 888	9.89 334	10	28	52
	12	33	9.79 463	16	9.90 138	26	0.09 862	9.89 324	10	27	48
	16	34	9.79 478	15	9.90 164	26	0.09 836	9.89 314	10	26	44
				16		26			10		
34	20	35	9.79 494		9.90 190		0.09 810	9.89 304		25	25 40
	24	36	9.79 510	16	9.90 216	26	0.09 784	9.89 294	10	24	36
	28	37	9.79 526	16	9.90 242	26	0.09 758	9.89 284	10	23	32
	32	38	9.79 542	16	9.90 268	26	0.09 732	9.89 274	10	22	28
	36	39	9.79 558	16	9.90 294	26	0.09 706	9.89 264	10	21	24
				15		26			10		
34	40	40	9.79 573		9.90 320		0.09 680	9.89 254		20	25 20
	44	41	9.79 589	16	9.90 346	26	0.09 654	9.89 244	10	19	16
	48	42	9.79 605	16	9.90 371	25	0.09 629	9.89 233	11	18	12
	52	43	9.79 621	16	9.90 397	26	0.09 603	9.89 223	10	17	8
	56	44	9.79 636	15	9.90 423	26	0.09 577	9.89 213	10	16	4
				16		20			10		
35	0	45	9.79 652		9.90 449		0.09 551	9.89 203		15	25 0
	4	46	9.79 668	16	9.90 475	26	0.09 525	9.89 193	10	14	56
	8	47	9.79 684	16	9.90 501	26	0.09 499	9.89 183	10	13	52
	12	48	9.79 699	15	9.90 527	26	0.09 473	9.89 173	10	12	48
	16	49	9.79 715	10	9.90 553	25	0.09 447	9.89 162	11	11	44
				16		25			10		
35	20	50	9.79 731		9.90 578		0.09 422	9.89 152		10	24 40
	24	51	9.79 746	15	9.90 604	20	0.09 396	9.89 142	10	9	36
	28	52	9.79 762	16	9.90 630	26	0.09 370	9.89 132	10	8	32
	32	53	9.79 778	16	9.90 656	26	0.09 344	9.89 122	10	7	28
	36	54	9.79 793	15	9.90 682	26	0.09 318	9.89 112	10	6	24
				16		26			11		
35	40	55	9.79 809		9.90 708		0.09 292	9.89 101		5	24 20
	44	56	9.79 825	16	9.90 734	26	0.09 266	9.89 091	10	4	16
	48	57	9.79 840	15	9.90 759	25	0.09 241	9.89 081	10	3	12
	52	58	9.79 856	16	9.90 785	26	0.09 215	9.89 071	10	2	8
	56	59	9.79 872	16	9.90 811	26	0.09 189	9.89 060	11	1	4
				15		26			10		
36	0	60	9.79 887		9.90 837		0.09 163	9.89 050		0	24 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2°		39°											
m.	s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.				
26	0	0	9.79 887		9.90 937		0.09 163	9.89 050		60	24	0	
	4	1	9.79 908	16	9.90 963	26	0.09 137	9.89 040	10	59		56	
	8	2	9.79 918	15	9.90 989	25	0.09 111	9.89 030	10	58		52	
	12	3	9.79 934	16	9.90 914	25	0.09 086	9.89 020	10	57		48	
	16	4	9.79 950	16	9.90 940	26	0.09 060	9.89 009	11	56		44	
				15		26			10				
26	20	5	9.79 965		9.90 966		0.09 034	9.88 999		55	25	40	
	24	6	9.79 981	16	9.90 992	26	0.09 008	9.88 989	10	54		36	
	28	7	9.79 996	15	9.91 018	26	0.08 982	9.88 978	11	53		32	
	32	8	9.80 012	16	9.91 043	25	0.08 957	9.88 968	10	52		28	
	36	9	9.80 027	15	9.91 069	26	0.08 931	9.88 958	10	51		24	
				16		26			10				
26	40	10	9.80 043		9.91 095		0.08 905	9.88 948		50	25	20	
	44	11	9.80 058	15	9.91 121	26	0.08 879	9.88 937	11	49		16	
	48	12	9.80 074	16	9.91 147	26	0.08 853	9.88 927	10	48		12	
	52	13	9.80 089	15	9.91 172	25	0.08 828	9.88 917	10	47		8	
	56	14	9.80 105	16	9.91 198	26	0.08 802	9.88 906	11	46		4	
				15		26			10				
37	0	15	9.80 120		9.91 224		0.08 776	9.88 896		45	20	0	
	4	16	9.80 136	16	9.91 250	26	0.08 750	9.88 886	10	44		56	
	8	17	9.80 151	15	9.91 276	26	0.08 724	9.88 875	11	43		52	
	12	18	9.80 166	16	9.91 301	25	0.08 699	9.88 865	10	42		48	
	16	19	9.80 182	16	9.91 327	26	0.08 673	9.88 855	10	41		44	
				15		26			11				
37	20	20	9.80 197		9.91 353		0.08 647	9.88 844		40	22	40	
	24	21	9.80 213	16	9.91 379	26	0.08 621	9.88 834	10	39		36	
	28	22	9.80 228	15	9.91 404	25	0.08 596	9.88 824	10	38		32	
	32	23	9.80 244	16	9.91 430	26	0.08 570	9.88 813	11	37		28	
	36	24	9.80 259	15	9.91 456	26	0.08 544	9.88 803	10	36		24	
				15		26			10				
37	40	25	9.80 274		9.91 482		0.08 518	9.88 793		35	22	30	
	44	26	9.80 290	16	9.91 507	25	0.08 493	9.88 782	11	34		16	
	48	27	9.80 306	15	9.91 533	26	0.08 467	9.88 772	10	33		12	
	52	28	9.80 320	16	9.91 559	24	0.08 441	9.88 761	11	32		8	
	56	29	9.80 336	16	9.91 585	26	0.08 415	9.88 751	10	31		4	
				15		25			10				
38	0	30	9.80 351		9.91 610		0.08 390	9.88 741		30	22	0	
	4	31	9.80 366	15	9.91 636	26	0.08 364	9.88 730	11	29		56	
	8	32	9.80 382	16	9.91 662	26	0.08 338	9.88 720	10	28		52	
	12	33	9.80 397	15	9.91 688	26	0.08 312	9.88 709	11	27		48	
	16	34	9.80 412	15	9.91 713	25	0.08 287	9.88 699	10	26		44	
				16		26			11				
38	20	35	9.80 428		9.91 739		0.08 261	9.88 688		25	21	40	
	24	36	9.80 443	15	9.91 765	26	0.08 235	9.88 678	10	24		36	
	28	37	9.80 458	15	9.91 791	26	0.08 209	9.88 668	10	23		32	
	32	38	9.80 473	15	9.91 816	25	0.08 184	9.88 657	11	22		28	
	36	39	9.80 489	16	9.91 842	26	0.08 158	9.88 647	10	21		24	
				15		26			11				
38	40	40	9.80 504		9.91 868		0.08 132	9.88 636		20	21	20	
	44	41	9.80 519	15	9.91 893	25	0.08 107	9.88 626	10	19		16	
	48	42	9.80 534	15	9.91 919	26	0.08 091	9.88 615	11	18		12	
	52	43	9.80 550	16	9.91 945	26	0.08 066	9.88 605	10	17		8	
	56	44	9.80 565	15	9.91 971	26	0.08 040	9.88 594	11	16		4	
				15		25			10				
38	0	45	9.80 580		9.91 996		0.08 004	9.88 584		15	21	0	
	4	46	9.80 596	15	9.92 022	26	0.07 978	9.88 573	11	14		56	
	8	47	9.80 610	15	9.92 048	26	0.07 952	9.88 563	10	13		52	
	12	48	9.80 625	16	9.92 073	25	0.07 927	9.88 552	11	12		48	
	16	49	9.80 641	16	9.92 099	26	0.07 901	9.88 542	10	11		44	
				15		26			11				
39	20	50	9.80 656		9.92 125		0.07 875	9.88 531		10	20	40	
	24	51	9.80 671	15	9.92 150	25	0.07 850	9.88 521	10	9		36	
	28	52	9.80 686	15	9.92 176	26	0.07 824	9.88 510	11	8		32	
	32	53	9.80 701	16	9.92 202	26	0.07 798	9.88 499	11	7		28	
	36	54	9.80 716	15	9.92 227	25	0.07 773	9.88 489	10	6		24	
				15		26			11				
39	40	55	9.80 731		9.92 253		0.07 747	9.88 478		5	20	20	
	44	56	9.80 746	15	9.92 279	26	0.07 721	9.88 468	10	4		16	
	48	57	9.80 762	16	9.92 304	25	0.07 696	9.88 457	11	3		12	
	52	58	9.80 777	15	9.92 330	26	0.07 670	9.88 447	10	2		8	
	56	59	9.80 792	16	9.92 356	25	0.07 644	9.88 436	11	1		4	
				15		25			11				
40	0	60	9.80 807		9.92 381		0.07 619	9.88 425		0	20	0	
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.			m.	s.

TABLE 21.—Five-place logarithms of circular functions, etc.—(Continued).

30°			40°								
m.	s.	t.	L. Sin.	d.	L. Tang	c. d.	L. Cotg.	L. Cos.	d.		
40	0	0	9.80 807		9.92 381		0.07 619	9.88 425		80	20 0
	4	1	9.80 822	15	9.92 407	26	0.07 593	9.88 415	10	59	56
	8	2	9.80 837	15	9.92 433	25	0.07 567	9.88 404	11	58	52
	12	3	9.80 852	15	9.92 458	25	0.07 542	9.88 394	10	57	48
	16	4	9.80 867	15	9.92 484	26	0.07 516	9.88 383	11	56	44
				15		26			11		
40	20	5	9.80 882		9.92 510		0.07 490	9.88 372		55	19 40
	24	6	9.80 897	15	9.92 535	25	0.07 465	9.88 362	10	54	36
	28	7	9.80 912	15	9.92 561	26	0.07 439	9.88 351	11	53	32
	32	8	9.80 927	15	9.92 587	26	0.07 413	9.88 340	11	52	28
	36	9	9.80 942	15	9.92 612	25	0.07 388	9.88 330	10	51	24
				15		26			11		
40	40	10	9.80 957		9.92 638		0.07 362	9.88 319		50	19 20
	44	11	9.80 972	15	9.92 663	25	0.07 337	9.88 308	11	49	16
	48	12	9.80 987	15	9.92 689	26	0.07 311	9.88 298	10	48	12
	52	13	9.81 002	15	9.92 715	26	0.07 285	9.88 287	11	47	8
	56	14	9.81 017	15	9.92 740	25	0.07 260	9.88 276	11	46	4
				15		26			10		
41	0	15	9.81 032		9.92 766		0.07 234	9.88 266		45	19 0
	4	16	9.81 047	15	9.92 792	25	0.07 208	9.88 255	11	44	56
	8	17	9.81 061	14	9.92 817	25	0.07 183	9.88 244	11	43	52
	12	18	9.81 076	15	9.92 843	26	0.07 157	9.88 234	10	42	48
	16	19	9.81 091	15	9.92 868	25	0.07 132	9.88 223	11	41	44
				15		26			11		
41	20	20	9.81 106		9.92 894		0.07 106	9.88 212		40	18 40
	24	21	9.81 121	15	9.92 920	26	0.07 080	9.88 201	11	39	36
	28	22	9.81 136	15	9.92 945	25	0.07 055	9.88 191	10	38	32
	32	23	9.81 151	15	9.92 971	26	0.07 029	9.88 180	11	37	28
	36	24	9.81 166	15	9.92 996	25	0.07 004	9.88 169	11	36	24
				14		26			11		
41	40	25	9.81 180		9.93 022		0.06 978	9.88 158		35	18 20
	44	26	9.81 195	15	9.93 048	26	0.06 952	9.88 148	10	34	16
	48	27	9.81 210	15	9.93 073	25	0.06 927	9.88 137	11	33	12
	52	28	9.81 225	15	9.93 099	26	0.06 901	9.88 126	11	32	8
	56	29	9.81 240	15	9.93 124	25	0.06 876	9.88 115	11	31	4
				14		26			10		
42	0	30	9.81 254		9.93 150		0.06 850	9.88 105		30	18 0
	4	31	9.81 269	15	9.93 175	26	0.06 825	9.88 094	11	29	56
	8	32	9.81 284	15	9.93 201	26	0.06 799	9.88 083	11	28	52
	12	33	9.81 299	15	9.93 227	26	0.06 773	9.88 072	11	27	48
	16	34	9.81 314	15	9.93 252	25	0.06 748	9.88 061	11	26	44
				14		26			10		
42	20	35	9.81 328		9.93 278		0.06 722	9.88 051		25	17 40
	24	36	9.81 343	15	9.93 303	25	0.06 697	9.88 040	11	24	36
	28	37	9.81 358	15	9.93 329	26	0.06 671	9.88 029	11	23	32
	32	38	9.81 372	14	9.93 354	25	0.06 646	9.88 018	11	22	28
	36	39	9.81 387	15	9.93 380	26	0.06 620	9.88 007	11	21	24
				15		26			11		
42	40	40	9.81 402		9.93 406		0.06 594	9.87 996		20	17 20
	44	41	9.81 417	15	9.93 431	25	0.06 569	9.87 985	11	19	16
	48	42	9.81 431	14	9.93 457	26	0.06 543	9.87 975	10	18	12
	52	43	9.81 446	15	9.93 482	25	0.06 518	9.87 964	11	17	8
	56	44	9.81 461	15	9.93 508	26	0.06 492	9.87 953	11	16	4
				14		25			11		
43	0	45	9.81 475		9.93 533		0.06 467	9.87 942		15	17 0
	4	46	9.81 490	15	9.93 559	26	0.06 441	9.87 931	11	14	56
	8	47	9.81 505	15	9.93 584	25	0.06 416	9.87 920	11	13	52
	12	48	9.81 519	14	9.93 610	26	0.06 390	9.87 909	11	12	48
	16	49	9.81 534	15	9.93 636	26	0.06 364	9.87 898	11	11	44
				15		25			11		
43	20	50	9.81 549		9.93 661		0.06 339	9.87 887		10	16 40
	24	51	9.81 563	14	9.93 687	26	0.06 313	9.87 877	10	9	36
	28	52	9.81 578	15	9.93 712	25	0.06 288	9.87 866	11	8	32
	32	53	9.81 592	14	9.93 738	26	0.06 262	9.87 855	11	7	28
	36	54	9.81 607	15	9.93 763	25	0.06 237	9.87 844	11	6	24
				15		26			11		
43	40	55	9.81 622		9.93 789		0.06 211	9.87 833		5	16 20
	44	56	9.81 636	14	9.93 814	25	0.06 186	9.87 822	11	4	16
	48	57	9.81 651	15	9.93 840	26	0.06 160	9.87 811	11	3	12
	52	58	9.81 665	14	9.93 865	25	0.06 135	9.87 800	11	2	8
	56	59	9.81 680	15	9.93 891	26	0.06 109	9.87 789	11	1	4
				14		25			11		
44	0	60	9.81 694		9.93 916		0.06 084	9.87 778		0	16 0
			L. Cos.	d.	L. Cotg	c. d.	L. Tang	L. Sin.	d.		m. s.

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2°			41°								
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
44	0	0	9.81 694		9.93 916		0.06 084	9.87 778		40	16 0
	4	1	9.81 709	15	9.93 942	25	0.06 058	9.87 767	11	59	56
	8	2	9.81 723	14	9.93 967	25	0.06 033	9.87 756	11	58	52
	12	3	9.81 738	15	9.93 998	25	0.06 007	9.87 745	11	57	48
	16	4	9.81 752	14	9.94 018	25	0.05 982	9.87 734	11	56	44
				15		26			11		
44	20	5	9.81 767		9.94 044		0.05 956	9.87 723		56	16 40
	24	6	9.81 781	14	9.94 069	25	0.05 931	9.87 712	11	54	36
	28	7	9.81 796	15	9.94 095	25	0.05 905	9.87 701	11	53	32
	32	8	9.81 810	14	9.94 120	25	0.05 880	9.87 690	11	52	28
	36	9	9.81 825	15	9.94 146	25	0.05 854	9.87 679	11	51	24
				14		26			11		
44	40	10	9.81 839		9.94 171		0.05 829	9.87 668		50	15 20
	44	11	9.81 854	15	9.94 197	25	0.05 803	9.87 657	11	49	16
	48	12	9.81 868	14	9.94 222	25	0.05 778	9.87 646	11	48	12
	52	13	9.81 882	14	9.94 248	25	0.05 752	9.87 635	11	47	8
	56	14	9.81 897	15	9.94 273	25	0.05 727	9.87 624	11	46	4
				14		26			11		
45	0	15	9.81 911		9.94 299		0.05 701	9.87 613		45	15 0
	4	16	9.81 926	15	9.94 324	25	0.05 676	9.87 601	12	44	56
	8	17	9.81 940	14	9.94 350	25	0.05 650	9.87 590	11	43	52
	12	18	9.81 955	15	9.94 375	25	0.05 625	9.87 579	11	42	48
	16	19	9.81 969	14	9.94 401	25	0.05 599	9.87 568	11	41	44
				14		26			11		
45	20	20	9.81 983		9.94 426		0.05 574	9.87 557		40	14 40
	24	21	9.81 998	15	9.94 452	25	0.05 548	9.87 546	11	39	36
	28	22	9.82 012	14	9.94 477	25	0.05 523	9.87 535	11	38	32
	32	23	9.82 026	14	9.94 503	25	0.05 497	9.87 524	11	37	28
	36	24	9.82 041	15	9.94 528	25	0.05 472	9.87 513	11	36	24
				14		26			12		
45	40	25	9.82 055		9.94 554		0.05 446	9.87 501		35	14 20
	44	26	9.82 069	14	9.94 579	25	0.05 421	9.87 490	11	34	16
	48	27	9.82 084	15	9.94 604	25	0.05 396	9.87 479	11	33	12
	52	28	9.82 098	14	9.94 630	25	0.05 370	9.87 468	11	32	8
	56	29	9.82 113	14	9.94 655	25	0.05 345	9.87 457	11	31	4
				14		26			11		
46	0	30	9.82 126		9.94 681		0.05 319	9.87 446		30	14 0
	4	31	9.82 141	15	9.94 706	25	0.05 294	9.87 434	12	29	56
	8	32	9.82 155	14	9.94 732	25	0.05 268	9.87 423	11	28	52
	12	33	9.82 169	14	9.94 757	25	0.05 243	9.87 412	11	27	48
	16	34	9.82 184	15	9.94 783	25	0.05 217	9.87 401	11	26	44
				14		26			11		
46	20	35	9.82 198		9.94 808		0.05 192	9.87 390		25	13 40
	24	36	9.82 212	14	9.94 834	25	0.05 166	9.87 378	12	24	36
	28	37	9.82 226	14	9.94 859	25	0.05 141	9.87 367	11	23	32
	32	38	9.82 240	14	9.94 884	25	0.05 116	9.87 356	11	22	28
	36	39	9.82 255	15	9.94 910	25	0.05 090	9.87 345	11	21	24
				14		26			11		
46	40	40	9.82 269		9.94 935		0.05 065	9.87 334		20	13 20
	44	41	9.82 283	14	9.94 961	25	0.05 039	9.87 322	12	19	16
	48	42	9.82 297	14	9.94 986	25	0.05 014	9.87 311	11	18	12
	52	43	9.82 311	14	9.95 012	25	0.04 988	9.87 300	11	17	8
	56	44	9.82 326	15	9.95 037	25	0.04 963	9.87 288	12	16	4
				14		26			11		
47	0	45	9.82 340		9.95 062		0.04 938	9.87 277		15	13 0
	4	46	9.82 354	14	9.95 088	25	0.04 912	9.87 266	11	14	56
	8	47	9.82 368	14	9.95 113	25	0.04 887	9.87 255	11	13	52
	12	48	9.82 382	14	9.95 139	25	0.04 861	9.87 243	12	12	48
	16	49	9.82 396	14	9.95 164	25	0.04 836	9.87 232	11	11	44
				14		26			11		
47	20	50	9.82 410		9.95 190		0.04 810	9.87 221		10	12 40
	24	51	9.82 424	14	9.95 215	25	0.04 785	9.87 209	12	9	36
	28	52	9.82 439	15	9.95 240	25	0.04 760	9.87 198	11	8	32
	32	53	9.82 453	14	9.95 266	25	0.04 734	9.87 187	11	7	28
	36	54	9.82 467	14	9.95 291	25	0.04 709	9.87 175	12	6	24
				14		26			11		
47	40	55	9.82 481		9.95 317		0.04 683	9.87 164		5	12 20
	44	56	9.82 495	14	9.95 342	25	0.04 658	9.87 153	11	4	16
	48	57	9.82 509	14	9.95 368	25	0.04 632	9.87 141	12	3	12
	52	58	9.82 523	14	9.95 393	25	0.04 607	9.87 130	11	2	8
	56	59	9.82 537	14	9.95 418	25	0.04 582	9.87 119	11	1	4
				14		26			12		
48	0	60	9.82 551		9.95 444		0.04 556	9.87 107		0	12 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.



TABLE 21.—*Five-place logarithms of circular functions, etc.—Continued.*

2 <sup>h</sup>			42°								
m.	s.	'	L. Sin	d	L. Tang	c. d.	L. Cotg.	L. Cos	d.		
48	0	0	9.82 551	14	9.95 444	25	0.04 556	9.87 107	11	60	12 0
	4	1	9.82 565	14	9.95 460	25	0.04 531	9.87 096	11	59	56
	8	2	9.82 579	14	9.95 475	25	0.04 505	9.87 085	11	58	52
	12	3	9.82 593	14	9.95 490	25	0.04 480	9.87 073	12	57	48
	16	4	9.82 607	14	9.95 505	25	0.04 455	9.87 062	11	56	44
						26			12		
48	20	5	9.82 621	14	9.95 521	25	0.04 429	9.87 050	11	55	40
	24	6	9.82 635	14	9.95 536	25	0.04 404	9.87 039	11	54	36
	28	7	9.82 649	14	9.95 552	25	0.04 378	9.87 028	11	53	32
	32	8	9.82 663	14	9.95 567	25	0.04 353	9.87 016	12	52	28
	36	9	9.82 677	14	9.95 582	25	0.04 328	9.87 005	11	51	24
						26			12		
48	40	10	9.82 691	14	9.95 598	25	0.04 302	9.86 993	11	50	20
	44	11	9.82 705	14	9.95 723	25	0.04 277	9.86 982	11	49	16
	48	12	9.82 719	14	9.95 748	25	0.04 252	9.86 970	12	48	12
	52	13	9.82 733	14	9.95 774	25	0.04 226	9.86 959	11	47	8
	56	14	9.82 747	11	9.95 799	25	0.04 201	9.86 947	12	46	4
						26			11		
49	0	15	9.82 761	14	9.95 825	25	0.04 175	9.86 936	12	45	0
	4	16	9.82 775	13	9.95 850	25	0.04 150	9.86 924	11	44	56
	8	17	9.82 788	11	9.95 875	25	0.04 125	9.86 913	11	43	52
	12	18	9.82 802	14	9.95 901	25	0.04 099	9.86 902	11	42	48
	16	19	9.82 816	14	9.95 926	25	0.04 074	9.86 890	12	41	44
						26			11		
49	20	20	9.82 830	14	9.95 952	25	0.04 048	9.86 879	12	40	40
	24	21	9.82 844	14	9.95 977	25	0.04 023	9.86 867	12	39	36
	28	22	9.82 858	14	9.96 002	25	0.03 998	9.86 855	12	38	32
	32	23	9.82 872	13	9.96 028	25	0.03 972	9.86 844	11	37	28
	36	24	9.82 886	14	9.96 053	25	0.03 947	9.86 832	12	36	24
						26			11		
49	40	25	9.82 899	14	9.96 078	25	0.03 922	9.86 821	12	35	20
	44	26	9.82 913	14	9.96 104	25	0.03 896	9.86 809	11	34	16
	48	27	9.82 927	14	9.96 129	25	0.03 871	9.86 798	12	33	12
	52	28	9.82 941	14	9.96 155	25	0.03 845	9.86 786	12	32	8
	56	29	9.82 955	13	9.96 180	25	0.03 820	9.86 775	11	31	4
						26			12		
50	0	30	9.82 968	14	9.96 205	25	0.03 795	9.86 763	11	30	0
	4	31	9.82 982	14	9.96 231	25	0.03 769	9.86 752	12	29	56
	8	32	9.82 996	14	9.96 256	25	0.03 744	9.86 740	12	28	52
	12	33	9.83 010	14	9.96 281	25	0.03 719	9.86 728	12	27	48
	16	34	9.83 023	12	9.96 307	25	0.03 693	9.86 717	11	26	44
						26			12		
50	20	35	9.83 037	14	9.96 332	25	0.03 668	9.86 706	12	25	40
	24	36	9.83 051	14	9.96 357	25	0.03 643	9.86 694	11	24	36
	28	37	9.83 065	14	9.96 383	25	0.03 617	9.86 682	12	23	32
	32	38	9.83 078	13	9.96 408	25	0.03 592	9.86 670	12	22	28
	36	39	9.83 092	14	9.96 433	25	0.03 567	9.86 659	11	21	24
						26			12		
50	40	40	9.83 106	14	9.96 459	25	0.03 541	9.86 647	12	20	20
	44	41	9.83 120	14	9.96 484	25	0.03 516	9.86 635	11	19	16
	48	42	9.83 133	13	9.96 510	25	0.03 490	9.86 624	12	18	12
	52	43	9.83 147	14	9.96 535	25	0.03 465	9.86 612	12	17	8
	56	44	9.83 161	14	9.96 560	25	0.03 440	9.86 600	12	16	4
						26			11		
51	0	45	9.83 174	14	9.96 586	25	0.03 414	9.86 589	12	15	0
	4	46	9.83 188	14	9.96 611	25	0.03 389	9.86 577	12	14	56
	8	47	9.83 202	14	9.96 636	25	0.03 364	9.86 565	12	13	52
	12	48	9.83 215	13	9.96 662	25	0.03 338	9.86 554	11	12	48
	16	49	9.83 229	11	9.96 687	25	0.03 313	9.86 542	12	11	44
						26			12		
51	20	50	9.83 242	14	9.96 712	25	0.03 288	9.86 530	12	10	40
	24	51	9.83 256	14	9.96 738	25	0.03 262	9.86 518	11	9	36
	28	52	9.83 270	14	9.96 763	25	0.03 237	9.86 507	12	8	32
	32	53	9.83 283	13	9.96 788	25	0.03 212	9.86 495	12	7	28
	36	54	9.83 297	14	9.96 814	25	0.03 186	9.86 483	12	6	24
						26			11		
51	40	55	9.83 310	14	9.96 839	25	0.03 161	9.86 472	12	5	20
	44	56	9.83 324	14	9.96 864	25	0.03 136	9.86 460	12	4	16
	48	57	9.83 338	14	9.96 890	25	0.03 110	9.86 448	12	3	12
	52	58	9.83 351	13	9.96 915	25	0.03 085	9.86 436	12	2	8
	56	59	9.83 365	14	9.96 940	25	0.03 060	9.86 425	11	1	4
						26			12		
52	0	60	9.83 378	13	9.96 966	25	0.03 034	9.86 413	12	0	0
			L. Cos.	d	L. Cotg.	c. d.	L. Tang.	L. Sin.	d	'	m. s.



TABLE 21. — *Five-place logarithms of circular functions, etc.* Continued.

3°		43°									
m. s.	'	L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.	'	m. s.	
52	0	9.83 273		9.96 966		0.03 034	9.86 413		40	3	0
	4	9.83 392	14	9.96 991	25	0.03 009	9.86 401	12	59		58
	8	9.83 406	13	9.97 016	25	0.02 984	9.86 389	12	58		59
12	2	9.83 419	14	9.97 042	26	0.02 958	9.86 377	12	57		48
16	6	9.83 432	13	9.97 067	25	0.02 933	9.86 366	11	56		44
			14		25			12			
52	20	9.83 446		9.97 092		0.02 908	9.86 354		55	7	40
	24	9.83 459	13	9.97 118	26	0.02 892	9.86 342	12	54		38
	28	9.83 473	14	9.97 143	25	0.02 857	9.86 330	12	53		32
	32	9.83 486	13	9.97 168	25	0.02 832	9.86 318	12	52		28
	36	9.83 500	14	9.97 193	25	0.02 807	9.86 306	12	51		24
			13		26			11			
52	40	9.83 513		9.97 219		0.02 781	9.86 295		50	7	20
	44	9.83 527	14	9.97 244	25	0.02 756	9.86 283	12	49		16
	48	9.83 540	13	9.97 269	25	0.02 731	9.86 271	12	48		12
	52	9.83 554	14	9.97 295	26	0.02 706	9.86 259	12	47		8
	56	9.83 567	13	9.97 320	25	0.02 680	9.86 247	12	46		4
			14		25			12			
52	0	9.83 581		9.97 345		0.02 655	9.86 236		45	7	0
	4	9.83 594	13	9.97 371	26	0.02 629	9.86 223	12	44		58
	8	9.83 608	14	9.97 396	25	0.02 604	9.86 211	12	43		52
12	12	9.83 621	13	9.97 421	25	0.02 579	9.86 200	11	42		48
16	16	9.83 634	13	9.97 447	25	0.02 553	9.86 188	12	41		44
			14		25			12			
52	20	9.83 648		9.97 473		0.02 528	9.86 176		40	6	40
	24	9.83 661	13	9.97 497	25	0.02 503	9.86 164	12	39		36
	28	9.83 674	13	9.97 523	26	0.02 477	9.86 152	12	38		32
	32	9.83 688	14	9.97 548	25	0.02 452	9.86 140	12	37		28
	36	9.83 701	13	9.97 573	25	0.02 427	9.86 128	12	36		24
			14		25			12			
52	40	9.83 715		9.97 598		0.02 402	9.86 116		35	6	20
	44	9.83 728	13	9.97 624	25	0.02 376	9.86 104	12	34		16
	48	9.83 741	13	9.97 649	25	0.02 351	9.86 092	12	33		12
	52	9.83 755	14	9.97 674	25	0.02 326	9.86 080	12	32		8
	56	9.83 769	13	9.97 700	25	0.02 300	9.86 068	12	31		4
			13		25			12			
54	0	9.83 781		9.97 725		0.02 275	9.86 056		30	5	0
	4	9.83 796	14	9.97 750	25	0.02 250	9.86 044	12	29		58
	8	9.83 808	13	9.97 776	25	0.02 224	9.86 032	12	28		52
12	12	9.83 821	13	9.97 801	25	0.02 199	9.86 020	12	27		48
16	16	9.83 834	13	9.97 826	25	0.02 174	9.86 008	12	26		44
			14		25			12			
54	20	9.83 848		9.97 851		0.02 149	9.85 996		35	5	40
	24	9.83 861	13	9.97 877	25	0.02 123	9.85 984	12	34		36
	28	9.83 874	13	9.97 902	25	0.02 098	9.85 972	12	33		32
	32	9.83 887	13	9.97 927	25	0.02 073	9.85 960	12	32		28
	36	9.83 901	14	9.97 953	25	0.02 047	9.85 948	12	31		24
			13		25			12			
54	40	9.83 914		9.97 978		0.02 022	9.85 936		29	5	20
	44	9.83 927	13	9.98 003	25	0.01 997	9.85 924	12	19		16
	48	9.83 940	13	9.98 029	25	0.01 971	9.85 912	12	18		12
	52	9.83 954	14	9.98 054	25	0.01 946	9.85 900	12	17		8
	56	9.83 967	13	9.98 079	25	0.01 921	9.85 888	12	16		4
			13		25			12			
55	0	9.83 980		9.98 104		0.01 896	9.85 876		15	5	0
	4	9.83 993	13	9.98 130	25	0.01 870	9.85 864	12	14		58
	8	9.84 006	13	9.98 156	25	0.01 845	9.85 851	12	13		52
12	12	9.84 020	14	9.98 180	25	0.01 820	9.85 839	12	12		48
16	16	9.84 033	13	9.98 206	25	0.01 794	9.85 827	12	11		44
			13		25			12			
55	20	9.84 046		9.98 231		0.01 769	9.85 815		10	4	40
	24	9.84 059	13	9.98 256	25	0.01 744	9.85 803	12	9		36
	28	9.84 072	13	9.98 281	25	0.01 719	9.85 791	12	8		32
	32	9.84 086	13	9.98 307	25	0.01 693	9.85 779	12	7		28
	36	9.84 098	14	9.98 332	25	0.01 668	9.85 766	12	6		24
55	40	9.84 112		9.98 357		0.01 643	9.85 754		5	4	20
	44	9.84 125	13	9.98 383	25	0.01 617	9.85 742	12	4		16
	48	9.84 138	13	9.98 408	25	0.01 592	9.85 730	12	3		12
	52	9.84 151	12	9.98 433	25	0.01 567	9.85 718	12	2		8
	56	9.84 164	13	9.98 458	25	0.01 542	9.85 706	12	1		4
			13		25			13			
56	0	9.84 177		9.98 484		0.01 516	9.85 693		0	4	0
		L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.	'	m. s.	

TABLE 21.—Five-place logarithms of circular functions, etc.—Continued.

2 <sup>b</sup>		44 <sup>c</sup>									
m.	s.		L. Sin.	d.	L. Tang.	c. d.	L. Cotg.	L. Cos.	d.		
56	0	0	9.84 177	13	9.98 484	25	0.01 516	9.85 693	12	60	4 0
	4	1	9.84 190	13	9.98 509	25	0.01 491	9.85 681	12	59	56
	8	2	9.84 208	13	9.98 534	26	0.01 466	9.85 669	12	58	52
	12	3	9.84 216	13	9.98 560	25	0.01 440	9.85 657	12	57	48
	16	4	9.84 229	13	9.98 585	25	0.01 415	9.85 645	13	56	44
56	20	5	9.84 242	13	9.98 610	25	0.01 390	9.85 632	12	55	3 40
	24	6	9.84 256	14	9.98 635	26	0.01 365	9.85 620	12	54	36
	28	7	9.84 269	13	9.98 661	25	0.01 339	9.85 608	12	53	32
	32	8	9.84 282	13	9.98 686	25	0.01 314	9.85 596	12	52	28
	36	9	9.84 295	13	9.98 711	26	0.01 289	9.85 583	13	51	24
56	40	10	9.84 308	13	9.98 737	25	0.01 263	9.85 571	12	50	3 20
	44	11	9.84 321	13	9.98 762	25	0.01 238	9.85 559	12	49	16
	48	12	9.84 334	13	9.98 787	25	0.01 213	9.85 547	12	48	12
	52	13	9.84 347	13	9.98 812	26	0.01 188	9.85 534	13	47	8
	56	14	9.84 360	13	9.98 838	25	0.01 162	9.85 522	12	46	4
57	0	16	9.84 373	12	9.98 863	25	0.01 137	9.85 510	18	45	8 0
	4	16	9.84 385	13	9.98 888	25	0.01 112	9.85 497	12	44	56
	8	17	9.84 398	13	9.98 913	26	0.01 087	9.85 485	12	43	52
	12	18	9.84 411	13	9.98 939	25	0.01 061	9.85 473	18	42	48
	16	19	9.84 424	13	9.98 964	25	0.01 036	9.85 460	12	41	44
57	20	20	9.84 437	13	9.98 989	26	0.01 011	9.85 448	12	40	2 40
	24	21	9.84 450	13	9.99 015	25	0.00 985	9.85 436	13	39	36
	28	22	9.84 463	13	9.99 040	25	0.00 960	9.85 423	12	38	32
	32	23	9.84 476	13	9.99 065	25	0.00 935	9.85 411	12	37	28
	36	24	9.84 489	13	9.99 090	26	0.00 910	9.85 399	13	36	24
57	40	25	9.84 502	13	9.99 116	25	0.00 884	9.85 386	12	35	2 20
	44	26	9.84 515	13	9.99 141	25	0.00 859	9.85 374	13	34	16
	48	27	9.84 528	12	9.99 166	25	0.00 834	9.85 361	12	33	12
	52	28	9.84 540	13	9.99 191	26	0.00 809	9.85 349	12	32	8
	56	29	9.84 553	13	9.99 217	25	0.00 783	9.85 337	13	31	4
58	0	30	9.84 566	13	9.99 242	25	0.00 758	9.85 324	12	30	2 0
	4	31	9.84 579	13	9.99 267	26	0.00 733	9.85 312	13	29	56
	8	32	9.84 592	13	9.99 293	25	0.00 707	9.85 299	12	28	52
	12	33	9.84 605	13	9.99 318	25	0.00 682	9.85 287	13	27	48
	16	34	9.84 618	12	9.99 343	25	0.00 657	9.85 274	12	26	44
58	20	35	9.84 630	13	9.99 368	26	0.00 632	9.85 262	12	25	1 40
	24	36	9.84 643	13	9.99 394	25	0.00 606	9.85 250	13	24	36
	28	37	9.84 656	13	9.99 419	25	0.00 581	9.85 237	12	23	32
	32	38	9.84 669	18	9.99 444	25	0.00 556	9.85 225	13	22	28
	36	39	9.84 682	12	9.99 469	26	0.00 531	9.85 212	12	21	24
58	40	40	9.84 694	13	9.99 495	25	0.00 505	9.85 200	13	20	1 20
	44	41	9.84 707	13	9.99 520	25	0.00 480	9.85 187	12	19	16
	48	42	9.84 720	13	9.99 545	25	0.00 455	9.85 175	13	18	12
	52	43	9.84 733	12	9.99 570	26	0.00 430	9.85 162	12	17	8
	56	44	9.84 745	13	9.99 596	25	0.00 404	9.85 150	13	16	4
59	0	45	9.84 758	13	9.99 621	25	0.00 379	9.85 137	12	15	1 0
	4	46	9.84 771	13	9.99 646	26	0.00 354	9.85 125	13	14	56
	8	47	9.84 784	12	9.99 672	25	0.00 328	9.85 112	12	13	52
	12	48	9.84 796	13	9.99 697	25	0.00 303	9.85 100	13	12	48
	16	49	9.84 809	13	9.99 722	25	0.00 278	9.85 087	13	11	44
59	20	50	9.84 822	13	9.99 747	26	0.00 253	9.85 074	12	10	0 40
	24	51	9.84 835	12	9.99 773	25	0.00 227	9.85 062	13	9	36
	28	52	9.84 847	13	9.99 798	25	0.00 202	9.85 049	12	8	32
	32	53	9.84 860	13	9.99 823	25	0.00 177	9.85 037	13	7	28
	36	54	9.84 873	12	9.99 848	26	0.00 152	9.85 024	12	6	24
59	40	55	9.84 885	13	9.99 874	25	0.00 126	9.85 012	13	5	0 20
	44	56	9.84 898	13	9.99 899	25	0.00 101	9.84 999	13	4	16
	48	57	9.84 911	12	9.99 924	25	0.00 076	9.84 986	12	3	12
	52	58	9.84 923	13	9.99 949	26	0.00 051	9.84 973	13	2	8
	56	59	9.84 936	13	9.99 975	25	0.00 025	9.84 961	12	1	4
60	0	60	9.84 949		0.00 000		0.00 000	9.84 949		0	0 0
			L. Cos.	d.	L. Cotg.	c. d.	L. Tang.	L. Sin.	d.		m. s.

TABLE 22.—GEODETIC POSITION COMPUTATIONS.

TABLE OF LOGARITHMS OF FACTORS A, B, C, D, E, F, BASED UPON THE CLARKE SPHEROID OF 1866 AND THE METRIC SYSTEM, BETWEEN LATITUDES 0° AND 72°.

[Extracted from reports of the U. S. Coast and Geodetic Survey.]

## CONSTANTS.

$A = \frac{(1 - e^2 \sin^2 \varphi)^{\frac{1}{2}}}{a \operatorname{arc} 1''}$	$\log a = 6.804\ 698\ 57$
$B = \frac{(1 - e^2 \sin^2 \varphi)^{\frac{1}{2}}}{a (1 - e^2) \operatorname{arc} 1''}$	$\log b = 6.803\ 223\ 78$
$C = \frac{(1 - e^2 \sin^2 \varphi)^{\frac{1}{2}} \tan \varphi}{2a^2 (1 - e^2) \operatorname{arc} 1''}$	$\log e^2 = 7.830\ 502\ 57$
$D = \frac{\frac{1}{2} e^2 \sin \varphi \cos \varphi \operatorname{arc} 1''}{1 - e^2 \sin^2 \varphi}$	$\log \frac{1}{a \operatorname{arc} 1''} = 8.509\ 726\ 56$
$E = \frac{(1 + 3 \tan^2 \varphi) (1 - e^2 \sin^2 \varphi)}{6a^2}$	$\log \frac{1}{a (1 - e^2) \operatorname{arc} 1''} = 8.512\ 676\ 15$
$F = \frac{1}{12} \sin \varphi \cos^2 \varphi \operatorname{arc}^2 1''$	$\log \frac{1}{2a^2 (1 - e^2) \operatorname{arc} 1''} = 1.406\ 947\ 6$
	$\log (\frac{1}{2} e^2 \operatorname{arc} 1'') = 2.692\ 168\ 7$
	$\log \frac{1}{6a^2} = 5.612\ 45$
	$\log (\frac{1}{12} \operatorname{arc}^2 1'') = 8.291\ 96$

Ratio adopted in this table is the Clarke value of the meter, namely, 1 meter = 39.370432 inches.

The formulas for the computation of the geodetic differences in latitude  $\Delta\varphi$ , in longitude  $\Delta\lambda$ , and in azimuth  $\Delta\alpha$  are as follows:

$$\begin{cases} -\Delta\varphi = s \cos \alpha \cdot B + s^2 \sin^2 \alpha \cdot C + (\delta\varphi)^2 D - h \cdot s^2 \sin^2 \alpha \cdot E \\ \Delta\lambda = s \sin \alpha \sec \varphi' \cdot A \\ -\Delta\alpha = \Delta\lambda \sin \frac{1}{2} (\varphi + \varphi') \sec \frac{1}{2} (\Delta\varphi) + (\Delta\lambda)^3 F \end{cases}$$

where

$$\begin{cases} \varphi' = \varphi + \Delta\varphi \\ \lambda' = \lambda + \Delta\lambda \\ \alpha' = \alpha + \Delta\alpha + 180 \end{cases} \quad \text{and} \quad \begin{cases} -\delta\varphi = s \cos \alpha \cdot B + s^2 \sin^2 \alpha \cdot C - h \cdot s^2 \sin^2 \alpha \cdot E \\ \text{also } h = s \cos \alpha \cdot B \end{cases}$$

For subordinate triangulation when the sides do not exceed say 25 kilometers, or about 15 statute miles, the term involving  $E$  in  $\Delta\varphi$  and the factor  $\sec \frac{1}{2} (\Delta\varphi)$ , as well as the term involving  $F$  in  $\Delta\alpha$ , may be omitted.

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 0°.

Lat.		log A	log B	log C	log D	log E	log F
0	0	8.509 7266	8.512 6761	—∞	—∞	5.6125	—∞
00	00			7.8707	5.156	5	
	1	66	61	8.1717	457	5	
	2	66	61	3477	633	5	
	3	66	61	4727	758	5	
	4	66	61				
	05	66	61	5696	855	5	
	6	66	61	6488	9.934	5	
	7	66	61	7158	0.001	5	
	8	66	61	7740	059	5	
	9	66	61	8249	110	5	
	10	8.509 7266	8.512 6761	8.8707	0.156	5.6125	
	11	65	61	9121	197	5	
	12	65	61	9499	235	5	
	13	65	61	8.9846	270	5	
	14	65	61	9.0168	302	5	
	15	65	61	0468	332	5	
	16	65	61	0748	360	5	
	17	65	60	1011	386	5	
	18	65	60	1259	411	5	
	19	65	60	1494	435	5	
	20	8.509 7265	8.512 6760	9.1717	0.457	5.6125	6.067
	21	65	60	1929	478	5	
	22	65	60	2131	498	5	
	23	65	60	2324	518	5	
	24	65	59	2509	536	5	
	25	65	59	2686	554	5	
	26	65	59	2857	571	5	
	27	65	59	3020	587	5	
	28	65	59	3178	603	5	
	29	65	58	3331	618	5	
	30	8.509 7265	8.512 6758	9.3478	0.633	5.6126	
	31	64	58	3620	647	6	
	32	64	58	3758	661	6	
	33	64	57	9.3892	674	6	
	34	64	57	9.4022	687	6	
	35	64	57	4148	700	6	
	36	64	57	4270	712	6	
	37	64	56	4389	724	6	
	38	64	56	4505	736	6	
	39	64	56	4618	747	6	
	40	8.509 7264	8.512 6756	9.4728	0.758	5.6126	6.358
	41	64	55	4835	760	6	
	42	64	55	9.4939	779	6	
	43	64	55	9.5042	789	6	
	44	63	54	5141	799	7	
	45	63	54	5239	809	7	
	46	63	54	5335	819	7	
	47	63	53	5428	828	7	
	48	63	53	5519	837	7	
	49	63	53	5609	846	7	
	50	8.509 7263	8.512 6752	9.5697	0.855	5.6127	
	51	63	52	5783	863	7	
	52	62	51	5866	872	7	
	53	62	51	9.5950	880	7	
	54	62	51	9.6031	888	8	
	55	62	50	6111	896	8	
	56	62	50	6189	904	8	
	57	62	49	6266	912	8	
	58	61	49	6341	919	8	
	59	61	49	6416	927	8	
	60	8.509 7261	8.512 6748	9.6489	0.934	5.6128	6.534

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 1°.

Lat.	log A	log B	log C	log D	log E	log F
00	8.509 7261	8.512 6748	9.6489	0.934	5.6128	4.594
1	61	48	500	941	29	
2	61	47	681	948	29	
3	61	47	701	955	29	
4	61	46	769	962	29	
5	60	46	880	969	29	
6	60	45	908	975	29	
7	60	44	9.6906	982	29	
8	60	44	9.7082	988	30	
9	60	44	096	0.995	30	
10	8.509 7260	8.512 6748	9.7168	1.001	5.6130	
11	60	43	220	007	30	
12	60	42	281	013	30	
13	60	42	341	019	30	
14	60	41	400	025	31	
15	59	41	456	031	31	
16	59	40	516	037	31	
17	59	39	572	042	31	
18	59	38	628	048	31	
19	59	38	684	053	31	
20	8.509 7256	8.512 6738	9.7735	1.059	5.6132	4.606
21	57	37	792	054	32	
22	57	36	846	070	32	
23	57	36	898	075	32	
24	57	35	9.7950	080	32	
25	57	35	9.8002	085	32	
26	56	34	056	090	33	
27	56	33	108	095	33	
28	56	33	162	100	33	
29	56	32	202	105	33	
30	8.509 7256	8.512 6731	9.8250	1.110	5.6133	
31	55	31	238	115	34	
32	55	30	346	119	34	
33	55	29	393	124	34	
34	55	29	439	129	34	
35	54	28	465	133	34	
36	54	27	581	138	35	
37	54	26	576	142	35	
38	54	25	620	147	35	
39	53	25	664	151	35	
40	8.509 7253	8.512 6724	9.8708	1.158	5.6136	4.755
41	53	23	751	160	36	
42	53	23	794	164	36	
43	52	22	836	168	36	
44	52	21	878	173	36	
45	52	20	920	177	37	
46	52	20	961	181	37	
47	51	19	9.9002	185	37	
48	51	19	042	189	37	
49	51	17	082	193	38	
50	8.509 7251	8.512 6716	9.9122	1.197	5.6138	
51	50	16	161	201	38	
52	50	15	200	205	38	
53	50	14	239	209	39	
54	49	13	277	212	39	
55	49	12	315	216	39	
56	49	11	353	220	39	
57	49	10	390	224	40	
58	48	10	427	227	40	
59	48	09	464	231	40	
60	8.509 7248	8.512 6708	9.9500	1.2347	5.6140	4.824

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 2°.

Lat.	log A	log B	log C	log D	log E	log F
2 00	8.509 7248	8.512 6708	9.95002	1.2347	5.6140	5.884
1	47	07	5863	383	41	
2	47	06	5721	419	41	
3	47	05	6076	454	41	
4	47	04	6428	489	41	
06	46	03	6777	524	42	
6	46	02	7123	559	42	
7	46	01	7467	593	42	
8	45	0700	7808	627	43	
9	45	0099	8146	661	43	
10	8.509 7245	8.512 6694	9.98482	1.2694	5.6143	
11	44	97	8815	727	43	
12	44	97	9145	760	44	
13	44	96	9473	793	44	
14	43	95	9.99799	826	44	
15	43	94	0.00122	858	45	
16	43	93	0443	890	45	
17	42	91	0762	922	45	
18	42	90	1078	958	45	
19	42	89	1392	1.2984	46	
20	8.509 7241	8.512 6688	0.01703	1.3015	5.6146	6.901
21	41	87	2013	046	46	
22	41	86	2320	077	47	
23	40	85	2625	107	47	
24	40	84	2928	138	47	
25	40	83	3229	168	48	
26	39	82	3528	197	48	
27	39	81	3825	227	48	
28	38	80	4119	258	49	
29	38	79	4412	285	49	
30	8.509 7238	8.512 6678	0.04708	1.3314	5.6149	
31	37	76	4992	318	50	
32	37	75	5279	372	50	
33	37	74	5564	400	50	
34	36	73	5847	428	51	
35	36	72	6129	456	51	
36	35	71	6408	484	51	
37	35	70	6686	512	52	
38	35	69	6962	540	52	
39	34	67	7237	567	52	
40	8.509 7234	8.512 6666	0.07509	1.3604	5.6153	6.950
41	33	65	7790	621	52	
42	33	64	8050	648	53	
43	33	62	8317	674	54	
44	32	61	8583	701	54	
45	32	60	8848	727	54	
46	31	59	9111	753	55	
47	31	58	9372	779	55	
48	31	56	9631	805	56	
49	30	55	0.09990	831	56	
50	8.509 7230	8.512 6654	0.10146	1.3856	5.6156	
51	29	52	0401	882	57	
52	29	51	0655	907	57	
53	28	50	0907	932	57	
54	28	49	1158	957	58	
55	28	47	1407	1.3962	58	
56	27	46	1655	1.4007	59	
57	27	45	1902	031	59	
58	26	43	2147	055	59	
59	26	42	2390	080	60	
60	8.509 7225	8.512 6641	0.12633	1.4104	5.6160	7.010

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 3°.						
Lat	log A	log B diff. 1" = 0.03	log C	log D	log E	log F
00	8.509 7225	8.512 6641	0.12633	1.4101	5.6160	7.010
1	26	39	2874	28	61	
2	24	38	3113	52	61	
3	24	37	3352	75	61	
4	24	35	3590	1.4199	62	
05	23	34	3825	1.4222	62	
6	23	33	4060	46	62	
7	22	31	4293	69	63	
8	22	30	4525	1.4292	63	
9	21	28	4756	1.4315	64	
10	8.509 7221	8.512 6627	0.14985	1.4338	5.6164	
11	20	26	5014	69	65	
12	20	24	5241	1.4393	65	
13	19	23	5467	1.4405	65	
14	19	21	5692	28	66	
15	18	20	5916	50	66	
16	18	18	6139	72	67	
17	17	17	6360	1.4494	67	
18	17	15	6580	1.4516	68	
19	16	14	6809	38	68	
20	8.509 7216	8.512 6612	0.17217	1.4560	5.6168	7.023
21	15	11	7034	1.4581	69	
22	15	09	7250	1.4603	69	
23	14	08	7468	24	70	
24	14	06	7679	45	70	
25	13	05	7892	66	71	
26	12	03	8104	1.4667	71	
27	12	02	8315	1.4708	72	
28	12	00	8525	29	72	
29	11	00	8733	50	72	
30	8.509 7211	8.512 6597	0.19341	1.4770	5.6173	
31	10	00	8948	1.4791	73	
32	10	04	9154	1.4811	74	
33	09	02	9359	32	74	
34	09	01	9563	52	75	
35	08	00	9766	72	75	
36	08	00	9968	1.4892	76	
37	07	00	10169	1.4912	76	
38	07	04	10669	32	77	
39	06	03	11168	52	77	
40	8.509 7206	8.512 6581	0.21367	1.4971	5.6178	7.026
41	05	00	11664	1.4991	78	
42	04	00	11761	1.5011	79	
43	04	04	11956	30	79	
44	03	03	12151	49	80	
45	03	02	12345	68	80	
46	02	02	12538	1.5088	81	
47	02	02	12731	1.5107	81	
48	01	02	12922	26	81	
49	01	06	13113	45	82	
50	8.509 7200	8.512 6564	0.23302	1.5163	5.6182	
51	7199	61	3491	1.5182	83	
52	99	61	3680	1.5201	84	
53	98	59	3867	19	84	
54	98	58	4053	38	85	
55	97	56	4239	56	85	
56	96	54	4424	75	86	
57	96	52	4608	1.5293	86	
58	95	50	4792	1.5311	87	
59	95	49	4974	29	87	
60	8.509 7194	8.512 6547	0.25156	1.5347	5.6188	7.123

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 4°.

Lat. /	log A	log B diff. 1" = -0.04	log C	log D	log E	log F
00	8.509 7194	8.512 6547	0.25156	1.5347	5.6188	7.133
1	93	45	5337	65	88	
2	93	43	5518	1.5383	89	
3	92	42	5697	1.5401	89	
4	92	40	5876	18	90	
05	91	38	6055	36	90	
6	91	36	6232	54	91	
7	90	34	6409	71	91	
8	89	32	6585	1.5489	92	
9	89	31	6760	1.5506	92	
10	8.509 7188	8.512 6529	0.26935	1.5523	5.6193	
11	87	27	7109	40	93	
12	87	25	7282	58	94	
13	86	23	7455	75	95	
14	86	21	7627	1.5592	95	
15	85	19	7798	1.5609	96	
16	84	17	7968	25	96	
17	84	16	8138	42	97	
18	83	14	8308	59	97	
19	82	12	8476	76	98	
20	8.509 7182	8.512 6510	0.28644	1.5692	5.6199	7.168
21	81	08	8812	1.5709	5.6199	
22	80	06	8978	25	5.6200	
23	80	04	9144	42	00	
24	79	02	9310	58	01	
25	78	6500	9475	74	01	
26	78	6498	9639	1.5791	02	
27	77	96	9802	1.5807	03	
28	76	94	0.29965	23	03	
29	76	92	0.30128	39	04	
30	8.509 7175	8.512 6490	0.30290	1.5855	5.6204	
31	74	88	0451	71	05	
32	74	86	0611	1.5887	05	
33	73	84	0771	1.5902	06	
34	72	82	0931	18	07	
35	72	80	1090	34	07	
36	71	78	1248	50	08	
37	70	76	1406	65	08	
38	70	74	1563	81	09	
39	69	72	1719	1.5996	10	
40	8.509 7168	8.512 6470	0.31875	1.6011	5.6210	7.200
41	67	68	2031	27	11	
42	67	65	2186	42	12	
43	66	63	2340	57	12	
44	66	61	2491	73	13	
45	65	59	2647	1.6088	13	
46	64	57	2800	1.6103	14	
47	63	55	2953	18	15	
48	63	53	3104	33	15	
49	62	51	3255	48	16	
50	8.509 7161	8.512 6448	0.33406	1.6163	5.6216	
51	60	46	3556	77	17	
52	60	44	3706	1.6192	18	
53	59	42	3855	1.6207	18	
54	58	40	4004	21	19	
55	57	38	4152	36	20	
56	57	35	4300	51	20	
57	56	33	4447	65	21	
58	55	31	4594	80	22	
59	55	29	4740	1.6294	22	
60	8.509 7154	8.512 6427	0.34885	1.6308	5.6223	7.229



TABLE 22.—Geodetic position computations—Continued.

LATITUDE 5°.

Lat.	log A	log B diff. 1" = -0.04	log C	log D diff. 1" = +0.22	log E	log F
0						
5 00	5.509 7154	5.512 6427	5.36886	1.6808	5.6226	7.220
1	88	24	5080	25	24	
2	58	23	5175	27	24	
3	52	20	5280	31	25	
4	51	18	5404	35	26	
5						
06	50	15	5537	39	26	
6	49	13	5680	1.6298	27	
7	48	11	5832	1.6437	28	
8	45	08	6004	21	28	
9	47	05	6176	25	29	
10	6.509 7145	5.512 6404	0.36817	1.6449	5.6230	
11	46	5402	6437	26	29	
12	45	5399	6597	77	31	
13	44	97	6737	1.6481	32	
14	43	95	6876	1.6504	33	
15	42	92	7015	16	33	
16	42	90	7154	22	34	
17	41	88	7292	45	34	
18	40	85	7429	50	35	
19	39	83	7566	72	35	
20	8.509 7139	5.512 6381	0.37708	1.6586	5.6236	7.256
21	38	78	7699	1.6609	37	
22	37	76	7875	1.6612	38	
23	36	73	8111	26	38	
24	35	71	8346	30	39	
25	35	69	8580	62	40	
26	34	66	8814	65	41	
27	33	64	9049	78	41	
28	32	61	9281	1.6692	42	
29	31	59	9514	1.6705	43	
30	8.509 7131	5.512 6356	0.38047	1.6718	5.6243	
31	30	54	9179	31	44	
32	29	52	9311	44	45	
33	28	49	9442	56	46	
34	27	47	9573	69	46	
35	27	44	9704	82	47	
36	26	42	9834	1.6795	48	
37	25	39	0.39904	1.6808	48	
38	24	37	0.40094	20	49	
39	23	34	0.223	33	50	
40	8.509 7122	5.512 6332	0.40351	1.6846	5.6251	7.262
41	21	29	0480	58	51	
42	21	27	0604	71	52	
43	20	24	0735	83	53	
44	19	21	0863	1.6896	54	
45	18	19	0990	1.6908	54	
46	17	16	1116	21	55	
47	16	14	1242	33	56	
48	15	11	1368	45	57	
49	15	09	1493	58	57	
50	8.509 7114	5.512 6306	0.41619	1.6970	5.6258	
51	13	08	1743	72	59	
52	12	6301	1868	1.6994	60	
53	11	6298	1992	1.7006	60	
54	10	96	2115	19	61	
55	09	93	2239	31	62	
56	09	90	2362	43	63	
57	08	88	2484	55	63	
58	07	85	2607	67	64	
59	06	82	2729	79	65	
60	6.509 7105	5.512 6280	0.42850	1.7090	5.6266	7.306

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 6°.

Lat.		log A diff. 1" = -0.02	log B diff. 1" = -0.05	log C	log D diff. 1" = +0.18	log E	log F
°	'						
6	00	8.509 7106	8.512 6280	0.42850	1.7090	5.6266	7.306
	1	04	77	2972	7102	67	
	2	03	74	3093	14	67	
	3	02	72	3213	26	68	
	4	01	69	3334	38	69	
	05	01	66	3454	50	70	
	6	7100	64	3573	61	70	
	7	7099	61	3693	73	71	
	8	98	58	3812	85	72	
	9	97	55	3931	1.7196	73	
	10	8.509 7096	8.512 6253	0.44049	1.7208	5.6274	
	11	96	50	4167	19	74	
	12	94	47	4285	31	75	
	13	93	44	4402	42	76	
	14	92	42	4519	54	77	
	15	91	39	4636	65	78	
	16	91	36	4753	76	78	
	17	90	33	4869	88	79	
	18	89	31	4985	1.7299	80	
	19	88	28	5101	1.7310	81	
	20	8.509 7087	8.512 6225	0.45216	1.7322	5.6282	7.329
	21	86	22	5331	33	83	
	22	85	19	5446	44	83	
	23	84	16	5560	55	84	
	24	83	14	5674	66	85	
	25	82	11	5788	78	86	
	26	81	08	5902	1.7389	87	
	27	80	05	6015	1.7400	88	
	28	79	6202	6128	11	88	
	29	78	6199	6241	22	89	
	30	8.509 7077	8.512 6196	0.46353	1.7433	5.6290	
	31	76	94	6465	44	91	
	32	75	91	6577	54	92	
	33	74	88	6689	65	93	
	34	73	85	6800	76	93	
	35	72	82	6911	87	94	
	36	71	79	7022	1.7498	95	
	37	70	76	7132	1.7508	96	
	38	70	73	7242	19	97	
	39	69	70	7352	30	98	
	40	8.509 7068	8.512 6167	0.47462	1.7541	5.6299	7.351
	41	67	64	7571	51	5.6299	
	42	66	61	7681	62	5.6300	
	43	65	58	7789	73	01	
	44	64	55	7898	83	02	
	45	63	52	8006	1.7594	03	
	46	62	49	8114	1.7604	04	
	47	61	46	8222	15	05	
	48	60	43	8330	25	06	
	49	59	40	8437	36	06	
	50	8.509 7058	8.512 6137	0.48544	1.7646	5.6207	
	51	57	34	8651	56	08	
	52	56	31	8757	67	09	
	53	55	28	8864	77	10	
	54	53	25	8970	87	11	
	55	52	22	9075	1.7698	12	
	56	51	19	9181	1.7708	13	
	57	50	16	9286	18	13	
	58	49	13	9391	28	14	
	59	48	10	9496	38	15	
	60	8.509 7047	8.512 6107	0.49600	1.7749	5.6216	7.371

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 7°.

Lat.	log A diff 1" = -0.02	log B diff. 1" = -0.06	log C	log D diff. 1" = +0.16	log E	log F
7 00	5.509 7047	5.512 5107	0.49000	1.7749	5.6816	7.871
1	46	03	705	59	17	
2	45	0100	809	69	18	
3	44	6097	0.49913	79	19	
4	43	94	0.50016	89	20	
06	42	91	119	1 7799	21	
6	41	88	222	1.7809	22	
7	40	85	325	19	23	
8	39	82	428	29	23	
9	38	78	530	39	24	
10	5.509 7087	5.512 6075	0.50032	1.7849	5.6835	
11	36	72	734	69	25	
12	35	69	836	68	27	
13	34	66	0.50987	78	28	
14	33	62	0.51089	88	29	
15	32	59	140	1.7898	30	
16	30	56	240	1.7908	31	
17	29	53	341	17	32	
18	28	50	441	27	33	
19	27	46	541	37	34	
20	5.509 7096	5.512 6043	0.51641	1.7946	5.6855	7.901
21	26	40	741	56	35	
22	24	37	840	66	37	
23	23	33	0.51939	75	37	
24	22	30	0.52036	85	38	
25	21	27	137	1.7994	39	
26	20	23	236	1.8004	40	
27	19	20	334	18	41	
28	17	17	432	23	42	
29	16	14	530	32	43	
30	5.509 7015	5.512 6010	0.52328	1.8042	5.6844	
31	14	07	725	51	45	
32	13	04	822	61	46	
33	12	0000	0.52919	70	47	
34	11	5997	0.53016	79	48	
35	10	94	113	89	49	
36	09	90	209	1 8098	50	
37	07	87	306	1.8107	51	
38	06	83	402	17	52	
39	05	80	497	26	53	
40	5.509 7004	5.512 5977	0.53593	1 8135	5.6854	7.409
41	03	73	588	44	55	
42	02	70	784	53	56	
43	01	66	879	63	57	
44	7000	63	0.53973	72	58	
45	6996	60	0.54068	81	59	
46	97	56	162	90	60	
47	96	53	257	1.8199	61	
48	95	49	351	1.8208	62	
49	94	46	444	17	63	
50	5.509 6993	5.512 5942	0.54538	1.8226	5.6864	
51	91	39	531	35	65	
52	90	35	725	44	66	
53	89	32	818	53	67	
54	88	28	0.54911	62	68	
55	87	25	0.55003	71	69	
56	86	21	096	80	70	
57	84	18	188	89	71	
58	83	14	280	1.8298	72	
59	82	11	372	1.8307	73	
60	5.509 6981	5.512 5907	0.55464	1.8315	5.6874	7.427

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 8°.

Lat.	log A diff. 1"=— 0.02	log B diff. 1"=— 0.06	log C	log D diff. 1"=+0.14	log E diff. 1"=+0.02	log F
0						
00	8.509 6981	8.512 5907	0.55464	1.8815	5.6374	7.427
1	80	04	555	24	75	
2	79	5900	646	33	76	
3	77	5897	738	42	77	
4	76	93	829	50	78	
05	75	90	0.55919	59	79	
6	74	86	0.56010	68	80	
7	73	82	100	77	81	
8	71	79	191	85	82	
9	70	75	281	1.8394	83	
10	8.509 6969	8.512 5872	0.56371	1.8403	5.6384	
11	68	68	460	12	85	
12	67	64	550	20	86	
13	65	61	639	28	87	
14	64	57	728	37	88	
15	63	54	817	45	90	
16	62	50	906	54	91	
17	61	46	0.56995	62	92	
18	59	43	0.57083	71	93	
19	58	39	172	79	94	
20	8.509 6957	8.512 5835	0.57260	1.8488	5.6395	7.441
21	56	32	348	1.8496	96	
22	54	28	436	1.8505	97	
23	53	24	523	13	98	
24	52	20	611	21	99	
25	51	17	698	30	5.6400	
26	49	13	785	38	5.6401	
27	48	09	872	46	02	
28	47	06	0.57959	55	03	
29	46	5802	0.58045	63	04	
30	8.509 6945	8.512 5798	0.58132	1.8571	5.6406	
31	43	94	218	80	07	
32	42	91	304	88	08	
33	41	87	390	1.8596	09	
34	39	83	476	1.8604	10	
35	38	79	562	13	11	
36	37	75	647	21	12	
37	36	72	732	29	13	
38	34	68	818	37	14	
39	33	64	903	45	15	
40	8.509 6932	8.512 5760	0.58987	1.8653	5.6416	7.461
41	31	56	0.59072	61	18	
42	29	53	157	69	19	
43	28	49	241	77	20	
44	27	45	325	85	21	
45	25	41	409	1.8693	22	
46	24	37	493	1.8701	23	
47	23	33	577	09	24	
48	22	29	660	17	25	
49	20	26	744	25	26	
50	8.509 6919	8.512 5722	0.59827	1.8733	5.6428	
51	18	18	910	41	29	
52	16	14	0.59993	49	30	
53	15	10	0.60076	57	31	
54	14	06	159	65	32	
55	12	5702	241	73	33	
56	11	5698	324	81	34	
57	10	94	406	89	35	
58	09	90	488	1.8796	37	
59	07	86	570	1.8804	38	
60	8.509 6906	8.512 5682	0.60652	1.8812	5.6439	7.476

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 9°.

Lat.	log A diff. 1" = -0.02	log B diff. 1" = -0.07	log C	log D diff. 1" = +0.12	log E diff. 1" = +0.02	log F
0 00	8.500 0000	8.512 5000	0.00000	1.0000	8.6400	7.470
1	05	78	780	20	40	
2	08	74	815	37	41	
3	09	70	866	56	42	
4	0901	66	0.00077	78	44	
05	0909	62	0.01050	51	45	
6	06	58	130	66	46	
7	07	54	230	86	47	
8	06	50	301	74	48	
9	04	46	351	81	49	
10	8.500 0000	8.512 5000	0.01051	1.0000	8.6400	
11	91	38	542	1.0007	82	
12	96	34	622	1.0004	84	
13	99	30	702	12	84	
14	97	26	781	19	85	
15	96	22	861	37	86	
16	94	18	0.01041	34	87	
17	92	14	0.00020	42	88	
18	92	10	000	50	89	
19	90	06	178	57	91	
20	8.500 0079	8.512 5000	0.02057	1.0004	8.6402	7.480
21	78	8600	306	72	92	
22	76	98	415	79	93	
23	75	90	495	87	94	
24	74	85	572	1.0004	97	
25	73	81	650	1.0002	98	
26	71	77	730	00	99	
27	69	73	806	17	70	
28	68	69	884	24	72	
29	67	64	0.02052	31	73	
30	8.500 0005	8.512 5000	0.03000	1.0000	8.6474	
31	64	56	117	■	76	
32	62	52	194	56	76	
33	61	48	271	61	78	
34	60	43	349	69	79	
35	58	39	426	75	80	
36	57	35	502	82	81	
37	55	31	579	90	83	
38	54	27	656	1.0007	84	
39	53	22	732	1.0104	85	
40	8.500 6851	8.512 5518	0.03806	1.0111	8.6486	7.500
41	50	14	885	19	87	
42	48	10	0.03861	26	89	
43	47	06	0.04037	33	90	
44	45	5501	112	40	91	
45	44	5497	188	47	92	
46	43	92	264	54	94	
47	41	88	339	61	95	
48	40	84	415	69	96	
49	38	80	490	76	97	
50	8.500 6837	8.512 5475	0.04565	1.0183	8.6498	
51	35	71	640	90	8.6500	
52	34	67	715	1.0197	01	
53	33	62	789	1.0204	02	
54	31	58	864	11	03	
55	30	54	0.04938	18	05	
56	28	49	0.05013	25	06	
57	27	45	087	32	07	
58	25	40	161	39	08	
59	24	36	235	46	10	
60	8.500 6822	8.512 5432	0.05777	1.0268	8.6511	7.510

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 10°.

Lat.		log A diff. 1" = -0.08	log B diff. 1" = -0.08	log C	log D diff. 1" = +0.11	log E diff. 1" = +0.02	log F
0	1						
10	00	8.509 6822	8.512 5432	0.65809	1.9253	5.6511	7.518
	1	21	27	383	60	12	
	2	19	23	456	67	13	
	3	18	19	530	74	15	
	4	17	14	603	80	16	
	05	15	10	677	87	17	
	6	14	06	750	1.9294	18	
	7	12	5401	823	1.9301	20	
	8	11	5396	896	06	21	
	9	9	92	0.65968	15	22	
	10	8.509 6808	8.512 5388	0.66041	1.9322	5.6524	
	11	06	83	114	23	25	
	12	05	79	186	35	26	
	13	03	74	259	42	27	
	14	02	70	331	49	29	
	15	6800	65	403	56	30	
	16	6799	61	475	63	31	
	17	97	56	547	69	33	
	18	96	52	619	76	34	
	19	94	47	691	82	35	
	20	8.509 6793	8.512 5343	0.66762	1.9389	5.6530	7.532
	21	91	38	834	1.9396	38	
	22	90	33	906	1.9403	39	
	23	88	29	0.66976	09	40	
	24	87	24	0.67047	16	42	
	25	85	20	118	23	43	
	26	84	15	189	29	44	
	27	82	11	260	36	46	
	28	81	06	331	42	47	
	29	79	5302	401	49	48	
	30	8.509 6777	8.512 5297	0.67472	1.9456	5.6549	
	31	76	92	542	52	51	
	32	74	88	613	59	52	
	33	73	83	683	75	53	
	34	71	79	753	82	55	
	35	70	74	823	88	56	
	36	68	69	893	1.9496	57	
	37	67	65	0.67962	1.9501	59	
	38	65	60	0.68032	06	60	
	39	64	55	102	14	61	
	40	8.509 6762	8.512 5251	0.68171	1.9521	5.6563	7.544
	41	60	46	240	27	64	
	42	59	41	310	34	65	
	43	57	37	379	40	67	
	44	56	32	446	47	68	
	45	54	27	517	53	69	
	46	53	23	586	60	71	
	47	51	18	654	66	72	
	48	50	13	723	72	73	
	49	48	08	791	79	75	
	50	8.509 6746	8.512 5204	0.68300	1.9555	5.6576	
	51	45	0199	923	91	78	
	52	43	94	0.68996	1.9598	79	
	53	42	89	0.69064	1.9604	80	
	54	40	85	132	10	82	
	55	38	80	200	17	83	
	56	37	76	268	23	84	
	57	35	70	336	29	86	
	58	34	66	404	36	87	
	59	32	61	471	42	88	
	00	8.509 6730	8.512 5156	0.69589	1.9648	5.6590	7.556

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 11°.

Lat.		log A diff. 1" = -0.03	log B diff. 1" = -0.08	log C	log D diff. 1" = +0.10	log E diff. 1" = +0.02	log F
D	'						
11	00	8.509 6730	8.512 5156	0.69689	1.9648	5.6590	7.556
	1	29	51	606	54	91	
	2	27	46	673	61	93	
	3	26	41	740	67	94	
	4	24	37	807	73	95	
	05	22	32	874	79	97	
	6	21	27	0.69941	86	98	
	7	19	22	0.70008	92	5.6599	
	8	18	17	074	1.9698	5.6601	
	9	16	12	141	1.9704	02	
	10	8.509 6714	8.512 5108	0.70208	1.9710	5.6604	
	11	13	5109	274	16	06	
	12	11	5098	340	23	08	
	13	09	5093	406	29	08	
	14	06	88	473	35	09	
	15	06	63	539	41	11	
	16	05	78	604	47	12	
	17	08	72	670	53	13	
	18	01	68	736	59	15	
	19	6700	63	802	65	16	
	20	8.509 6698	8.512 5068	0.70867	1.9771	5.6618	7.568
	21	98	58	873	77	19	
	22	96	49	0.70908	83	20	
	23	93	44	0.71058	89	22	
	24	91	39	128	1.9795	23	
	25	90	34	194	1.9801	25	
	26	88	29	259	07	26	
	27	86	24	323	13	27	
	28	85	19	388	19	29	
	29	83	14	453	25	30	
	30	8.509 6681	8.512 5009	0.71518	1.9831	5.6632	
	31	80	04	512	37	33	
	32	78	4999	647	43	35	
	33	76	94	711	49	36	
	34	75	89	775	55	37	
	35	73	83	840	61	39	
	36	71	78	904	67	40	
	37	70	73	0.71968	73	42	
	38	68	68	0.72032	79	43	
	39	66	63	096	85	45	
	40	8.509 6665	8.512 4968	0.72159	1.9890	5.6646	7.580
	41	63	53	223	1.9896	47	
	42	61	48	286	1.9902	49	
	43	59	43	350	08	50	
	44	58	38	413	14	52	
	45	56	33	477	20	53	
	46	54	28	540	25	55	
	47	53	22	603	31	56	
	48	51	17	666	37	58	
	49	49	12	729	43	59	
	50	8.509 6647	8.512 4907	0.72792	1.9949	5.6661	
	51	46	4902	855	54	62	
	52	44	4897	918	60	64	
	53	43	92	0.72980	66	65	
	54	41	86	0.73043	72	66	
	55	39	81	106	77	68	
	56	37	76	168	83	69	
	57	35	71	230	89	71	
	58	34	66	293	94	72	
	59	32	60	356	1.9900	74	
	60	8.509 6630	8.512 4865	0.73417	2.0006	5.6675	7.591

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 12°.

Lat.		log A diff. 1"=−0.03	log B diff. 1"=−0.09	log C	log D diff. 1"=+0.09	log E diff. 1"=+0.04	log F
°	'						
12	00	8.509 6630	8.512 4855	0.73417	2.0006	5.6675	7.591
	1	29	50	479	11	77	
	2	27	45	541	17	78	
	3	25	39	603	23	80	
	4	23	34	664	28	81	
	05	21	29	726	34	83	
	6	20	24	788	40	84	
	7	18	18	849	45	86	
	8	16	13	911	51	87	
	9	14	08	0.73972	57	89	
	10	8.509 6613	8.512 4803	0.74033	2.0062	5.6690	
	11	11	4797	094	67	92	
	12	09	92	156	73	93	
	13	07	87	217	79	95	
	14	06	81	278	84	96	
	15	04	76	339	90	98	
	16	02	71	399	2.0096	99	
	17	6600	65	460	2.0101	5.6701	
	18	6599	60	521	07	02	
	19	97	55	581	12	04	
	20	8.509 6596	8.512 4749	0.74642	2.0118	5.6705	7.601
	21	93	44	702	23	07	
	22	91	39	763	29	08	
	23	90	33	823	34	10	
	24	88	28	883	40	11	
	25	86	23	0.74943	45	13	
	26	84	17	0.75003	50	14	
	27	82	12	063	56	16	
	28	81	06	123	61	17	
	29	79	4701	183	67	19	
	30	8.509 6577	8.512 4696	0.75243	2.0172	5.6720	
	31	75	90	302	77	22	
	32	73	85	362	83	24	
	33	72	79	422	88	25	
	34	70	74	481	94	27	
	35	68	68	540	2.0199	28	
	36	66	63	600	2.0205	30	
	37	64	57	659	10	31	
	38	62	52	718	15	33	
	39	61	46	777	21	34	
	40	8.509 6559	8.512 4641	0.75836	2.0226	5.6736	7.611
	41	57	35	895	32	37	
	42	55	30	0.75954	37	39	
	43	53	24	0.76013	42	41	
	44	51	19	072	47	42	
	45	50	13	130	53	44	
	46	48	08	189	58	45	
	47	46	4602	247	63	47	
	48	44	4597	306	69	48	
	49	42	91	364	74	50	
	50	8.509 6540	8.512 4586	0.76422	2.0279	5.6751	
	51	39	80	481	84	53	
	52	37	75	539	90	55	
	53	35	69	597	2.0295	56	
	54	33	63	655	2.0300	58	
	55	31	58	713	05	59	
	56	29	52	771	10	61	
	57	27	47	828	16	62	
	58	25	41	886	21	64	
	59	24	35	0.76944	26	66	
	60	8.509 6522	8.512 4530	0.77001	2.0381	5.6767	7.621



TABLE 22 — *Geodetic position computations*—Continued.

LATITUDE 18°.

Lat.	log A diff. 1" = -0.03	log B diff. 1" = -0.10	log C diff. 1" = +0.93	log D diff. 1" = +0.08	log E diff. 1" = +0.03	log F
0						
18 00	8.609 6522	8.512 4530	0.77001	2.0831	5.6767	7.621
1	30	34	059	36	69	
2	18	19	116	42	70	
3	16	18	174	47	72	
4	14	07	231	52	74	
5						
6	12	4003	288	57	75	
7	10	4496	345	62	77	
8	09	90	402	67	78	
9	07	95	459	73	80	
10	06	79	517	78	82	
11						
12	8.509 6508	8.512 4473	0.77074	2.0838	5.6768	
13	6591	67	680	89	85	
14	6499	82	687	98	86	
15	97	54	744	2.0888	88	
16	95	30	801	2.0468	90	
17						
18	99	45	857	09	91	
19	98	29	914	13	93	
20	90	38	0.77970	18	94	
21	88	27	0.78027	23	96	
22	86	22	083	28	98	
23						
24	8.509 6464	8.512 4418	0.78139	2.0833	5.6769	7.621
25	82	19	195	28	5.6821	
26	80	4404	251	44	66	
27	78	6289	307	49	64	
28	76	98	363	54	66	
29						
30	74	87	419	59	67	
31	72	81	475	64	69	
32	70	76	531	69	11	
33	68	70	587	74	12	
34	66	64	643	79	14	
35						
36	8.509 6464	8.512 4356	0.78098	2.0483	5.6816	
37	63	52	754	88	17	
38	61	46	809	93	19	
39	59	41	865	2.0498	20	
40	57	36	920	2.0503	22	
41						
42	55	29	0.78075	06	24	
43	53	23	0.79080	13	25	
44	51	17	086	18	27	
45	49	11	141	23	29	
46	47	4306	196	28	30	
47						
48	8.509 6445	8.512 4299	0.79251	2.0533	5.6833	7.640
49	43	94	306	26	34	
50	41	88	360	42	35	
51	39	83	415	47	37	
52	37	78	470	52	39	
53						
54	35	70	525	57	41	
55	33	64	579	62	42	
56	31	58	634	67	44	
57	29	52	688	72	45	
58	27	46	743	78	47	
59						
60	8.509 6425	8.512 4240	0.79797	2.0583	5.6849	
61	23	34	851	86	50	
62	21	28	906	91	52	
63	19	22	0.79960	2.0596	54	
64	17	16	0.80014	2.0601	56	
65						
66	15	10	008	06	57	
67	13	4204	122	10	59	
68	11	4198	176	15	60	
69	09	92	230	20	62	
70	07	86	284	24	64	
71						
72	8.509 6405	8.512 4180	0.80837	2.0629	5.6865	7.649

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 14°.

Lat.		log A diff.1"=−0.03	log B diff.1"=−0.10	log C diff.1"=+0.87	log D diff.1"=+0.08	log E diff.1"=+0.03	log F
°	'						
14	00	8.509 6405	8.512 4180	0.80837	2.0629	5.6865	7.649
	1	03	74	891	34	67	
	2	6401	68	445	39	69	
	3	6399	62	498	43	71	
	4	97	56	552	48	72	
	05	96	50	606	53	74	
	6	93	44	659	58	76	
	7	91	38	712	62	77	
	8	89	32	765	67	79	
	9	87	26	819	72	81	
	10	8.509 6385	8.512 4120	0.80872	2.0676	5.6882	
	11	83	14	925	81	84	
	12	81	08	0.80978	86	86	
	13	79	4101	0.81031	90	88	
	14	77	4095	084	2.0695	89	
	15	75	89	137	2.0700	91	
	16	73	83	190	04	93	
	17	71	77	243	09	94	
	18	69	71	295	14	96	
	19	67	65	348	18	98	
	20	8.509 6365	8.512 4059	0.81401	2.0723	5.6900	7.658
	21	63	52	453	28	01	
	22	61	46	506	32	03	
	23	58	40	558	36	05	
	24	56	34	611	41	06	
	25	54	28	663	46	08	
	26	52	21	715	51	10	
	27	50	15	767	55	12	
	28	48	09	820	60	13	
	29	46	4003	872	64	15	
	30	8.509 6344	8.512 3997	0.81924	2.0769	5.6917	
	31	42	90	0.81976	73	19	
	32	40	84	0.82028	78	20	
	33	38	78	080	83	22	
	34	36	72	131	87	24	
	35	34	65	183	92	26	
	36	32	59	235	2.0796	27	
	37	29	53	287	2.0801	29	
	38	27	47	338	05	31	
	39	25	40	390	10	33	
	40	8.509 6323	8.512 3934	0.82441	2.0814	5.6934	7.667
	41	21	28	493	19	36	
	42	19	22	544	23	38	
	43	17	15	596	28	40	
	44	15	09	647	32	41	
	45	13	3903	698	37	43	
	46	11	3896	749	41	45	
	47	08	90	800	46	47	
	48	06	84	852	50	48	
	49	04	77	903	54	50	
	50	8.509 6302	8.512 3871	0.82954	2.0859	5.6952	
	51	6300	65	0.83005	63	54	
	52	6298	58	055	68	55	
	53	96	52	106	72	57	
	54	94	45	157	77	59	
	55	92	39	208	81	61	
	56	89	33	258	85	63	
	57	87	26	309	90	64	
	58	85	20	360	94	66	
	59	83	13	410	2.0899	68	
	60	8.509 6281	8.512 3807	0.83461	2.0903	5.6970	7.675

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 15°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.11	log C diff. 1" = +0.82	log D diff. 1" = +0.07	log E diff. 1" = +0.08	log F
15 00	8.509 0281	8.512 3807	0.83461	2.0003	5.6970	7.676
1	79	3801	511	07	72	
2	77	3794	503	19	73	
3	74	38	612	18	75	
4	73	81	602	21	77	
06	70	75	712	25	79	
6	69	66	703	29	80	
7	66	62	813	34	82	
8	64	56	803	35	84	
9	62	48	913	42	86	
10	8.509 0259	8.512 3743	0.83463	2.0047	5.6989	
11	57	38	0.84012	51	89	
12	55	30	082	55	91	
13	52	23	112	59	93	
14	51	17	162	64	95	
15	49	10	212	68	97	
16	46	3704	261	72	5.6999	
17	44	3697	311	77	5.7000	
18	42	91	361	81	92	
19	40	84	410	85	94	
20	8.509 0238	8.512 3677	0.84460	2.0090	5.7006	7.683
21	36	71	509	94	98	
22	33	64	558	2.0098	99	
23	31	56	608	2.1002	11	
24	29	51	657	07	13	
25	27	45	706	11	15	
26	24	38	756	15	17	
27	22	31	804	19	19	
28	20	25	854	23	20	
29	18	18	903	28	22	
30	8.509 0216	8.512 3612	0.84952	2.1032	5.7024	
31	14	3606	0.85001	36	26	
32	11	3508	049	40	28	
33	09	92	098	44	30	
34	07	85	147	49	31	
35	05	79	196	53	33	
36	02	72	245	57	35	
37	6200	65	293	61	37	
38	6194	59	342	65	39	
39	96	52	390	69	41	
40	8.509 6194	8.512 3545	0.85439	2.1074	5.7042	7.691
41	91	39	437	78	44	
42	89	32	486	82	46	
43	87	25	534	86	48	
44	85	19	583	90	50	
45	82	12	631	94	52	
46	80	3506	729	2.1099	54	
47	78	3498	777	2.1103	56	
48	76	92	825	07	57	
49	73	85	874	11	59	
50	8.509 6171	8.512 3478	0.85922	2.1115	5.7061	
51	69	71	0.85970	19	63	
52	67	65	0.86018	23	65	
53	64	58	066	27	67	
54	62	51	113	31	69	
55	60	44	161	36	70	
56	58	38	209	39	72	
57	56	31	257	44	74	
58	53	24	304	48	76	
59	51	17	352	52	78	
60	8.509 6149	8.512 3411	0.86400	2.1156	5.7080	7.698

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 16°.

Lat.		log A diff. 1"=−0.04	log B diff. 1"=−0.12	log C diff. 1"=+0.77	log D diff. 1"=+0.06	log E diff. 1"=+0.03	log F
°	'						
16	00	8.509 6149	8.512 3411	0.86400	2.1156	5.7080	7.698
	1	46	3404	447	60	82	
	2	44	3397	495	64	84	
	3	42	90	542	68	85	
	4	40	88	590	72	87	
	05	37	76	637	76	89	
	6	35	70	684	80	91	
	7	33	63	732	84	93	
	8	30	56	779	88	95	
	9	28	49	826	92	97	
	10	8.509 6126	8.512 3342	0.86873	2.1196	5.7099	
	11	24	35	921	2.1200	5.7101	
	12	21	28	0.86968	04	03	
	13	19	22	0.87015	08	04	
	14	17	15	062	12	06	
	15	14	08	109	16	08	
	16	12	3301	156	20	10	
	17	10	3294	202	24	12	
	18	08	87	249	28	14	
	19	05	80	296	32	16	
	20	8.509 6103	8.512 3273	0.87343	2.1236	5.7118	7.705
	21	6101	66	389	40	20	
	22	6098	59	436	44	22	
	23	96	52	483	47	24	
	24	94	45	529	51	25	
	25	91	39	576	55	27	
	26	89	32	622	59	29	
	27	87	25	669	63	31	
	28	84	18	715	67	33	
	29	82	11	761	71	35	
	30	8.509 6080	8.512 3204	0.87808	2.1275	5.7137	
	31	77	3197	854	79	39	
	32	75	90	900	83	41	
	33	73	83	947	87	43	
	34	70	76	0.87993	90	45	
	35	68	69	0.88039	94	47	
	36	66	62	085	2.1298	49	
	37	63	55	131	2.1302	51	
	38	61	48	177	06	52	
	39	59	41	223	10	54	
	40	8.509 6056	8.512 3133	0.88269	2.1314	5.7156	7.712
	41	54	26	315	17	58	
	42	52	19	360	21	60	
	43	49	12	406	25	62	
	44	47	3105	452	29	64	
	45	45	3098	498	33	66	
	46	42	91	543	37	68	
	47	40	84	589	40	70	
	48	37	77	634	44	72	
	49	35	70	680	48	74	
	50	8.509 6033	8.512 3063	0.88726	2.1352	5.7176	
	51	30	56	771	56	78	
	52	28	48	816	59	80	
	53	26	41	862	63	82	
	54	23	34	907	67	84	
	55	21	27	952	71	86	
	56	18	20	0.88998	74	88	
	57	16	13	0.89043	78	90	
	58	14	3006	088	82	92	
	59	11	2998	133	86	94	
	60	8.509 6009	8.512 2991	0.89178	2.1390	5.7196	7.719

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 17°.

Lat.	log A diff. 1" = -0.04	log B diff. 1" = -0.12	log C diff. 1" = -0.73	log D diff. 1" = +0.06	log E diff. 1" = +0.08	log F
17 00	8.509 0008	8.512 2921	0.89178	2.1890	5.7196	7.719
1	06	84	223	98	97	
2	04	77	268	2.1897	99	
3	8082	79	313	2.1401	8.7201	
4	5999	62	358	04	98	
05	97	56	403	08	06	
6	94	49	448	12	07	
7	92	41	493	16	09	
8	90	34	538	19	11	
9	87	26	583	23	13	
10	8.509 5985	8.512 2913	0.89277	2.1427	5.7215	
11	82	12	672	20	17	
12	80	2906	717	34	19	
13	78	2907	761	38	21	
14	76	90	806	42	23	
15	72	82	850	45	25	
16	70	76	895	49	27	
17	68	68	939	53	29	
18	66	61	0.89304	56	31	
19	62	54	0.90228	60	33	
20	8.509 5961	8.512 2946	0.90072	2.1404	5.7235	7.726
21	68	30	117	64	37	
22	66	22	161	71	39	
23	64	24	206	75	41	
24	61	17	249	78	43	
25	48	10	294	82	45	
26	46	2902	338	86	47	
27	44	2796	383	89	49	
28	41	86	428	93	51	
29	39	80	470	2.1498	53	
30	8.509 5936	8.512 2773	0.90514	2.1500	5.7255	
31	34	66	568	04	57	
32	31	58	602	07	59	
33	29	51	646	11	61	
34	26	44	689	14	64	
35	24	36	733	18	66	
36	21	29	777	22	68	
37	19	21	821	25	70	
38	16	14	864	29	72	
39	14	2707	908	32	74	
40	8.509 5912	8.512 2699	0.90962	2.1536	5.7276	7.732
41	09	92	0.90906	39	76	
42	07	84	0.91039	42	78	
43	04	77	062	47	82	
44	5902	69	126	50	84	
45	5899	62	169	54	86	
46	97	55	212	57	88	
47	94	47	256	61	90	
48	92	40	299	64	92	
49	89	32	342	68	94	
50	8.509 5887	8.512 2625	0.91386	2.1571	5.7296	
51	84	17	429	75	5.7298	
52	82	10	472	78	5.7300	
53	79	2602	515	82	02	
54	77	2506	558	85	04	
55	74	87	601	89	06	
56	72	80	644	92	08	
57	69	72	687	96	11	
58	67	65	730	2.1609	13	
59	64	57	773	2.1608	15	
60	8.509 5862	8.512 2550	0.91816	2.1608	5.7317	7.738

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 18°.

Lat.		log A diff. 1" = -0.04	log B diff. 1" = -0.13	log C diff. 1" = +0.70	log D diff. 1" = +0.06	log E diff. 1" = +0.03	log F diff. 10' = +3.0
°	'						
18	00	8.509 5862	8.512 2550	0.91816	2.1606	5.7317	7.738
	1	59	42	859	10	19	
	2	57	35	902	13	21	
	3	54	27	945	17	23	
	4	52	19	0.91987	20	25	
	05	49	12	0.92030	24	27	
	6	46	8.512 2504	073	27	29	
	7	44	8.512 2497	115	31	31	
	8	41	89	158	34	33	
	9	39	81	201	38	35	
	10	8.509 5836	8.512 2474	0.92243	2.1641	5.7337	
	11	34	66	286	44	39	
	12	31	59	328	48	41	
	13	29	51	371	51	44	
	14	26	43	413	55	46	
	15	24	36	456	58	48	
	16	21	28	498	62	50	
	17	19	20	540	65	52	
	18	16	13	582	68	54	
	19	13	8.512 2405	625	72	56	
	20	8.509 5811	8.512 2397	0.92667	2.1675	5.7358	7.744
	21	08	90	709	79	60	
	22	06	82	751	82	62	
	23	03	74	793	85	64	
	24	8.509 5801	67	836	89	67	
	25	8.509 5798	59	878	92	69	
	26	96	51	920	95	71	
	27	93	44	0.92962	2.1699	73	
	28	90	36	0.93004	2.1702	75	
	29	88	28	046	06	77	
	30	8.509 5785	8.512 2320	0.93088	2.1709	5.7379	
	31	83	13	129	12	81	
	32	80	8.512 2305	171	16	83	
	33	78	8.512 2297	213	19	85	
	34	75	90	255	22	88	
	35	72	82	296	26	90	
	36	70	74	338	29	92	
	37	67	66	380	32	94	
	38	65	58	421	36	96	
	39	62	51	463	39	5.7398	
	40	8.509 5759	8.512 2243	0.93505	2.1742	5.7400	7.750
	41	57	35	546	46	02	
	42	54	27	588	49	05	
	43	52	19	629	52	07	
	44	49	12	671	56	09	
	45	46	8.512 2204	712	59	11	
	46	44	8.512 2196	753	62	13	
	47	41	88	795	65	15	
	48	39	80	836	69	17	
	49	36	72	877	72	19	
	50	8.509 5733	8.512 2165	0.93919	2.1775	5.7422	
	51	81	57	0.93960	79	24	
	52	28	49	0.94001	82	26	
	53	25	41	042	85	28	
	54	23	33	083	88	30	
	55	20	25	125	92	32	
	56	18	17	166	95	34	
	57	15	10	207	2.1798	37	
	58	12	8.512 2102	248	2.1801	39	
	59	10	8.512 2094	289	05	41	
	60	8.509 5707	8.512 2086	0.94330	2.1808	5.7443	7.756

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 19°.

Lat.		log A diff. 1" = -0.04	log B diff. 1" = -0.13	log C diff. 1" = +0.67	log D diff. 1" = +0.05	log E diff. 1" = +0.04	log F diff. 10" = +2.7
19	00	8.509 5707	8.512 2088	0.94380	2.1808	5.7443	7.756
	1	04	78	370	11	45	
	2	8.509 5702	70	411	14	47	
	3	8.509 5699	62	452	18	49	
	4	96	54	493	21	52	
	5						
	6	84	46	534	24	54	
	7	91	38	575	27	56	
	8	99	30	616	30	58	
	9	88	22	656	34	60	
		82	14	697	37	62	
	10	8.509 5691	8.512 2006	0.94787	2.1840	5.7484	
	11	78	8.512 1999	778	43	67	
	12	75	91	819	46	69	
	13	78	98	860	50	71	
	14	70	75	900	53	73	
	15						
	16	67	67	940	56	75	
	17	65	59	0.94881	59	78	
	18	62	51	0.95021	62	80	
	19	59	43	981	65	82	
		67	35	102	69	84	
	20	8.509 5684	8.512 1927	0.95143	2.1872	5.7486	7.761
	21	82	19	132	73	86	
	22	49	11	173	76	91	
	23	46	8.512 1908	213	81	95	
	24	43	8.512 1890	253	84	95	
	25						
	26	41	67	294	88	97	
	27	39	70	334	91	5.7499	
	28	36	71	374	94	5.7501	
	29	33	63	414	2.1897	04	
		30	55	454	2.1900	06	
	30	8.509 5627	8.512 1847	0.95544	2.1903	5.7508	
	31	25	38	494	07	10	
	32	22	30	534	10	12	
	33	19	22	574	13	15	
	34	16	14	614	16	17	
	35						
	36	14	8.512 1806	744	19	19	
	37	11	8.512 1798	784	22	21	
	38	08	90	824	25	23	
	39	06	82	863	28	26	
		03	74	903	31	28	
	40	8.509 5600	8.512 1766	0.95843	2.1934	5.7530	7.767
	41	8.509 5599	57	0.95983	38	32	
	42	06	49	0.96022	41	34	
	43	02	41	062	44	37	
	44	89	33	102	47	39	
	45						
	46	87	25	142	50	41	
	47	84	17	181	53	43	
	48	81	08	221	56	46	
	49	78	8.512 1700	260	59	48	
		75	8.512 1692	300	62	50	
	50	8.509 5573	8.512 1664	0.96389	2.1965	5.7552	
	51	70	75	379	64	51	
	52	68	67	418	71	57	
	53	65	59	457	74	59	
	54	62	51	497	77	61	
	55						
	56	50	43	536	80	63	
	57	57	34	575	83	65	
	58	54	26	615	86	68	
	59	51	18	654	89	70	
		48	10	693	92	72	
	60	8.509 5546	8.512 1602	0.96783	2.1996	5.7574	7.772

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 20°.

Lat.		log A diff.1"= -0.05	log B diff.1"= -0.14	log C diff.1"= +0.64	log D diff.1"= +0.05	log E diff.1"= +0.04	log F diff.10'= +2.5
0	00	8.509 5546	8.512 1602	0.96733	2.1996	5.7574	7.772
	1	43	8.512 1593	772	2.1999	77	
	2	40	85	811	2.2002	79	
	3	37	77	850	05	81	
	4	35	68	889	08	83	
	05	32	60	928	11	86	
	6	29	52	0.96967	14	88	
	7	26	44	0.97006	17	90	
	8	24	35	045	20	92	
	9	21	27	084	23	94	
	10	8.509 5518	8.512 1519	0.97123	2.2026	5.7597	
	11	15	10	162	28	5.7599	
	12	12	8.512 1502	201	31	5.7601	
	13	10	8.512 1494	240	34	03	
	14	07	85	279	37	06	
	15	04	77	318	40	08	
	16	8.509 5501	69	356	43	10	
	17	8.509 5499	60	395	46	12	
	18	96	52	434	49	15	
	19	93	44	472	52	17	
	20	8.509 5490	8.512 1435	0.97511	2.2055	5.7619	7.777
	21	87	27	550	58	21	
	22	85	18	588	61	24	
	23	82	10	627	64	26	
	24	79	8.512 1402	666	67	28	
	25	76	8.512 1393	704	70	30	
	26	73	85	743	73	33	
	27	71	76	781	76	35	
	28	68	68	819	79	37	
	29	65	60	858	81	40	
	30	8.509 5462	8.512 1351	0.97896	2.2084	5.7642	
	31	59	43	935	87	44	
	32	57	34	0.97973	90	46	
	33	54	26	0.98011	93	49	
	34	51	17	050	96	51	
	35	48	09	088	2.2099	53	
	36	45	8.512 1301	126	2.2102	55	
	37	42	8.512 1292	164	05	58	
	38	40	84	203	08	60	
	39	37	75	241	10	62	
	40	8.509 5434	8.512 1267	0.98279	2.2113	5.7664	7.782
	41	31	58	317	16	67	
	42	28	50	355	19	69	
	43	25	41	393	22	71	
	44	23	33	431	25	74	
	45	20	24	469	28	76	
	46	17	16	507	31	78	
	47	14	8.512 1207	545	33	81	
	48	11	8.512 1199	583	36	83	
	49	08	90	621	39	85	
	50	8.509 5406	8.512 1182	0.98659	2.2142	5.7688	
	51	03	73	697	45	90	
	52	8.509 5400	64	735	48	92	
	53	8.509 5397	56	773	50	94	
	54	94	47	811	53	97	
	55	91	39	848	56	5.7699	
	56	88	30	886	59	5.7701	
	57	86	21	924	62	04	
	58	83	13	962	65	06	
	59	80	8.512 1104	0.98999	67	08	
	60	8.509 5377	8.512 1096	0.99037	2.2170	5.7711	7.787



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 21°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.15	log C diff. 1" = +0.082	log D diff. 1" = +0.04	log E diff. 1" = +0.04	log F diff. 10" = +2.2
21 00	8.509 5877	8.512 1096	0.99087	2.2170	5.7711	7.787
1	74	87	075	78	13	
2	71	79	112	76	16	
3	68	70	150	79	19	
4	65	62	187	81	20	
5						
6	60	58	225	84	22	
7	57	45	262	87	24	
8	54	36	300	90	27	
9	51	27	337	93	29	
		19	375	96	31	
10	8.509 5848	8.512 1010	0.99412	2.2198	5.7734	
11	46	8.512 1002	450	2.2201	35	
12	43	8.512 0998	487	04	38	
13	40	84	524	07	41	
14	37	76	562	09	43	
15						
16	34	67	600	12	46	
17	31	58	638	15	48	
18	28	50	675	18	50	
19	25	41	713	20	52	
	22	32	749	23	55	
20	8.509 5820	8.512 0924	0.99785	2.2226	5.7757	7.792
21	17	25	822	29	59	
22	14	8.512 0908	859	32	62	
23	11	8.512 0897	896	34	64	
24	08	89	933	37	66	
25						
26	05	80	0.99971	40	69	
27	8.509 5802	71	1.00006	42	71	
28	8.509 5299	62	045	45	73	
29	96	54	083	48	75	
	93	45	119	50	78	
30	8.509 5290	8.512 0836	1.00156	2.2253	5.7780	
31	88	27	192	53	83	
32	85	19	229	59	86	
33	82	10	266	61	87	
34	79	8.512 0901	303	64	90	
35						
36	76	8.512 0792	340	67	92	
37	73	84	377	69	94	
38	70	75	413	72	97	
39	67	66	450	75	5.7799	
	64	57	487	78	5.7802	
40	8.509 5281	8.512 0746	1.00524	2.2280	5.7804	7.796
41	58	39	500	83	06	
42	55	31	537	86	09	
43	52	22	574	88	11	
44	49	13	610	91	13	
45						
46	46	8.512 0704	707	94	16	
47	44	8.512 0695	743	96	18	
48	41	86	780	2.2299	20	
49	38	78	816	2.2301	23	
	35	69	853	04	25	
50	8.509 5232	8.512 0680	1.00690	2.2307	5.7828	
51	29	61	926	09	30	
52	26	42	962	12	32	
53	23	33	1.00999	15	35	
54	20	24	1.01085	17	37	
55						
56	17	15	072	20	40	
57	14	8.512 0608	108	23	42	
58	11	8.512 0598	144	25	44	
59	08	89	181	28	47	
	05	80	217	31	49	
60	8.509 5202	8.512 0571	1.01263	2.2323	5.7851	7.800

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 22°.

Lat.		log A diff. 1" = -0.05	log B diff. 1" = -0.15	log C diff. 1" = +0.59	log D diff. 1" = +0.04	log E diff. 1" = +0.04	log F diff. 10" = +2.0
°	'						
22	00	8.509 5202	8.512 0571	1.01253	2.2333	5.7851	7.800
	1	8.509 5199	62	289	36	54	
	2	96	53	326	38	56	
	3	98	44	362	41	59	
	4	90	35	398	44	61	
	05	87	26	434	46	63	
	6	84	17	470	49	66	
	7	81	8.512 0508	506	51	68	
	8	78	8.512 0499	542	54	71	
	9	75	90	578	57	73	
	10	8.509 5172	8.512 0481	1.01615	2.2359	5.7875	
	11	69	72	651	62	78	
	12	66	63	687	64	80	
	13	63	54	723	67	83	
	14	60	45	759	70	85	
	15	57	36	794	72	87	
	16	54	27	830	75	90	
	17	51	18	866	77	92	
	18	48	09	902	80	95	
	19	45	8.512 0400	938	83	97	
	20	8.509 5142	8.512 0391	1.01974	2.2385	5.7899	7.804
	21	39	82	1.02010	88	5.7902	
	22	36	73	045	90	04	
	23	33	64	081	93	07	
	24	30	55	117	95	09	
	25	27	46	153	2.2398	11	
	26	24	37	188	2.2400	14	
	27	21	28	224	03	16	
	28	18	19	260	06	19	
	29	15	10	295	08	21	
	30	8.509 5112	8.512 0301	1.02331	2.2411	5.7924	
	31	09	8.512 0292	367	13	26	
	32	06	83	402	16	28	
	33	03	73	438	18	31	
	34	8.509 5100	64	473	21	33	
	35	8.509 5097	55	509	23	36	
	36	94	46	544	26	38	
	37	91	37	580	28	41	
	38	88	28	615	31	43	
	39	85	19	651	33	45	
	40	8.509 5082	8.512 0210	1.02646	2.2436	5.7948	7.808
	41	79	8.512 0200	721	38	50	
	42	76	8.512 0191	757	41	53	
	43	72	82	792	43	55	
	44	69	73	828	46	58	
	45	66	64	863	48	60	
	46	63	55	898	51	62	
	47	60	46	933	53	65	
	48	57	36	1.02969	56	67	
	49	54	27	1.03004	58	70	
	50	8.509 5051	8.512 0118	1.03039	2.2461	5.7972	
	51	48	09	074	63	75	
	52	45	8.512 0100	109	66	77	
	53	42	8.512 0090	145	68	80	
	54	39	81	180	70	82	
	55	36	72	215	73	84	
	56	33	63	250	75	87	
	57	30	54	285	78	89	
	58	27	44	320	80	92	
	59	23	35	355	83	94	
	60	8.509 5020	8.512 0026	1.03390	2.2485	5.7997	7.812

TABLE 22 — *Geodetic position computations—Continued*

LATITUDE 23°.

Lat.	log A diff. 1" = -0.05		log B diff. 1" = -0.16		log C diff. 1" = +0.57		log D diff. 1" = +0.04		log E diff. 1" = +0.04		log F diff. 10' = +1.8	
	°	'										
22	00		8.509 5030	8.512 0008	1.08380		2.2455		5.7997		7.812	
	1		17	17	425		86		5.7999			
	2		14	8.512 0008	450		90		5.8002			
	3		11	8.511 9998	495		93		04			
	4		08	89	530		95		07			
	05		05	80	565		2.2497		09			
	6		8.509 5002	71	600		2.2500		12			
	7		8.509 4999	61	634		02		14			
	8		96	52	669		06		16			
	9		93	43	704		07		19			
	10		8.509 4990	8.511 9994	1.08799		2.2510		5.8021			
	11		87	24	774		12		24			
	12		83	15	809		14		26			
	13		80	8.511 9906	849		17		29			
	14		77	8.511 9898	879		19		31			
	15		74	87	913		22		34			
	16		71	76	947		24		36			
	17		68	68	1.08982		26		39			
	18		65	59	1.04017		29		41			
	19		62	50	052		31		44			
	20		8.509 4959	8.511 9840	1.04006		2.2534		5.8046		7.816	
	21		55	31	121		35		49			
	22		52	22	155		38		51			
	23		49	12	190		41		54			
	24		46	8.511 9803	224		43		56			
	25		43	8.511 9794	259		45		59			
	26		40	84	293		48		61			
	27		37	75	328		50		64			
	28		34	66	362		53		66			
	29		31	56	397		55		69			
	30		8.509 4927	8.511 9747	1.04431		2.2557		5.8071			
	31		24	87	466		60		74			
	32		21	78	500		62		76			
	33		18	19	534		64		79			
	34		15	09	569		67		81			
	35		12	8.511 9700	603		69		84			
	36		09	8.511 9690	637		71		86			
	37		06	81	672		74		89			
	38		8.509 4902	71	706		76		91			
	39		8.509 4899	62	740		78		93			
	40		8.509 4896	8.511 9658	1.04775		2.2581		5.8096		7.819	
	41		98	43	809		83		5.8099			
	42		90	34	843		85		5.8101			
	43		87	24	877		88		04			
	44		83	15	911		90		06			
	45		80	8.511 9605	945		92		09			
	46		77	8.511 9596	1.04980		95		11			
	47		74	86	1.05014		97		14			
	48		71	77	048		2.2599		16			
	49		68	67	082		2.2601		19			
	50		8.509 4865	8.511 9556	1.05116		2.2604		5.8121			
	51		61	48	150		06		24			
	52		56	39	184		09		26			
	53		55	29	218		11		29			
	54		52	20	252		13		31			
	55		49	10	286		16		34			
	56		45	8.511 9501	320		18		36			
	57		42	8.511 9491	354		20		39			
	58		39	82	388		23		41			
	59		36	72	422		25		44			
	60		8.509 4833	8.511 9468	1.05456		2.2627		5.8146		7.823	

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 24°.

Lat.		log A diff. 1" = -0.05	log B diff. 1" = -0.16	log C diff. 1" = +0.56	log D diff. 1" = +0.04	log E diff. 1" = +0.04	log F diff. 10' = +1.6
°	'						
24	00	8.509 4833	8.511 9463	1.05456	2.2627	5.8146	7.823
	1	30	53	490	29	49	
	2	26	44	523	31	51	
	3	23	34	557	34	54	
	4	20	24	591	36	57	
	05	17	15	625	38	59	
	6	14	8.511 9405	658	41	62	
	7	10	8.511 9396	692	43	64	
	8	07	86	726	45	67	
	9	04	77	760	47	69	
	10	8.509 4801	8.511 9367	1.05794	2.2650	5.8172	
	11	8.509 4798	58	827	52	74	
	12	94	48	861	54	77	
	13	91	38	894	56	79	
	14	88	29	928	59	82	
	15	85	19	962	61	85	
	16	82	09	1.05995	63	87	
	17	78	8.511 9300	1.06029	65	90	
	18	75	8.511 9290	062	68	92	
	19	72	81	096	70	95	
	20	8.509 4769	8.511 9271	1.06130	2.2672	5.8197	7.826
	21	66	61	163	74	5.8200	
	22	62	52	197	77	02	
	23	59	42	230	79	05	
	24	56	32	263	81	07	
	25	53	23	297	83	10	
	26	50	13	330	85	13	
	27	46	8.511 9203	364	88	15	
	28	43	8.511 9194	397	90	18	
	29	40	84	431	92	20	
	30	8.509 4737	8.511 9174	1.06464	2.2694	5.8223	
	31	33	65	497	96	25	
	32	30	55	530	2.2699	28	
	33	27	45	564	2.2701	31	
	34	24	35	597	03	33	
	35	20	26	630	05	36	
	36	17	16	664	07	38	
	37	14	8.511 9106	697	10	41	
	38	11	8.511 9096	730	12	43	
	39	07	87	763	14	46	
	40	8.509 4704	8.511 9077	1.06797	2.2716	5.8249	7.829
	41	8.509 4701	67	830	18	51	
	42	8.509 4698	58	863	20	54	
	43	94	48	896	23	56	
	44	91	38	929	25	59	
	45	88	28	962	27	61	
	46	85	18	1.06995	29	64	
	47	81	8.511 9009	1.07028	31	67	
	48	78	8.511 8999	061	33	69	
	49	75	89	095	36	72	
	50	8.509 4672	8.511 8979	1.07128	2.2738	5.8274	
	51	68	70	161	40	77	
	52	65	60	194	42	80	
	53	62	50	226	44	82	
	54	59	40	259	46	85	
	55	55	30	292	49	87	
	56	52	21	325	51	90	
	57	49	11	358	53	92	
	58	45	8.511 8901	391	55	95	
	59	42	8.511 8891	424	57	5.8298	
	60	8.509 4639	8.511 8881	1.07457	2.2759	5.8300	7.832

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 25°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.16	log C diff. 1" = +0.54	log D diff. 1" = +0.08	log E diff. 1" = +0.04	log F diff. 10" = +1.5
°	'						
25	00	8.509 4639	8.511 8881	1.07457	2.2759	5.8300	7.832
	1	36	71	490	61	03	
	2	32	62	523	63	05	
	3	29	52	555	66	08	
	4	26	42	588	68	11	
	05	23	32	621	70	13	
	6	19	22	654	72	16	
	7	16	12	687	74	18	
	8	13	8.511 8802	719	76	21	
	9	09	8.511 8793	752	78	24	
	10	8.509 4606	8.511 8783	1.07785	2.2780	5.8326	
	11	03	73	817	82	29	
	12	8.509 4600	63	850	85	32	
	13	8.509 4596	53	883	87	34	
	14	93	43	915	89	37	
	15	90	33	948	91	39	
	16	86	23	1.07981	93	42	
	17	83	13	1.08013	95	45	
	18	80	8.511 8704	046	97	47	
	19	76	8.511 8694	078	2.2799	50	
	20	8.509 4573	8.511 8684	1.08111	2.2801	5.8352	7.835
	21	70	74	143	03	55	
	22	66	64	176	05	59	
	23	63	54	208	07	60	
	24	60	44	241	10	63	
	25	56	34	273	12	66	
	26	53	24	306	14	68	
	27	50	14	338	16	71	
	28	46	8.511 8604	370	18	73	
	29	43	8.511 8594	403	20	76	
	30	8.509 4540	8.511 8584	1.08435	2.2822	5.8379	
	31	37	74	468	24	81	
	32	33	64	500	26	84	
	33	30	54	532	28	87	
	34	26	44	565	30	89	
	35	23	34	597	32	92	
	36	20	24	629	34	94	
	37	17	14	662	36	5.8397	
	38	13	8.511 8504	694	38	5.8400	
	39	10	8.511 8494	726	40	02	
	40	8.509 4507	8.511 8484	1.08758	2.2842	5.8405	7.838
	41	03	74	791	44	08	
	42	8.509 4500	64	823	46	10	
	43	8.509 4496	54	855	48	13	
	44	93	44	887	50	16	
	45	90	34	919	52	18	
	46	86	24	951	54	21	
	47	83	14	1.08984	56	24	
	48	80	8.511 8404	1.09016	58	26	
	49	76	8.511 8393	048	60	29	
	50	8.509 4473	8.511 8383	1.09080	2.2862	5.8431	
	51	70	73	112	64	34	
	52	66	63	144	66	37	
	53	63	53	176	68	39	
	54	60	43	208	70	42	
	55	56	33	240	72	45	
	56	53	23	272	74	47	
	57	50	13	304	76	50	
	58	46	8.511 8303	336	78	53	
	59	43	8.511 8293	368	80	55	
	60	8.509 4439	8.511 8283	1.09400	2.2882	5.8458	7.841

TABLE 22.—*Geodetic position computations*—Continued.

LATITUDE 26°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.17	log C diff. 1" = +0.52	log D diff. 1" = +0.03	log E diff. 1" = +0.04	log F diff. 10' = +1.3
°	'						
26	00	8.509 4439	8.511 8283	1.09400	2.2882	5.8458	7.841
	1	86	72	432	84	61	
	2	33	62	464	86	63	
	3	29	52	496	88	66	
	4	26	42	527	90	69	
	05	22	32	559	92	71	
	6	19	22	591	94	74	
	7	16	12	623	96	77	
	8	12	8.511 8201	655	2.2888	79	
	9	09	8.511 8191	687	2.2900	82	
	10	8.509 4406	8.511 8181	1.09718	2.2902	5.8485	
	11	8.509 4402	71	750	04	88	
	12	8.509 4399	61	782	06	90	
	13	95	51	814	08	93	
	14	92	40	845	10	96	
	15	88	30	877	12	5.8498	
	16	85	20	909	14	5.8501	
	17	82	10	940	16	04	
	18	78	8.511 8100	1.09972	18	06	
	19	75	8.511 8089	1.10004	20	09	
	20	8.509 4372	8.511 8079	1.10036	2.2922	5.8512	7.844
	21	68	69	067	23	14	
	22	65	59	099	25	17	
	23	61	48	130	27	20	
	24	58	38	162	29	22	
	25	54	28	194	31	25	
	26	51	18	225	33	28	
	27	48	8.511 8008	257	35	30	
	28	44	8.511 7997	288	37	33	
	29	41	87	320	39	36	
	30	8.509 4337	8.511 7977	1.10351	2.2941	5.8539	
	31	34	67	383	43	41	
	32	31	56	414	45	44	
	33	27	46	446	47	47	
	34	24	36	477	48	49	
	35	20	25	509	50	52	
	36	17	15	540	52	55	
	37	13	8.511 7906	571	54	57	
	38	10	8.511 7895	603	56	60	
	39	07	84	634	58	63	
	40	8.509 4303	8.511 7874	1.10666	2.2960	5.8566	7.846
	41	8.509 4300	64	697	62	68	
	42	8.509 4296	53	728	63	71	
	43	93	43	760	65	74	
	44	89	33	791	67	76	
	45	86	22	822	69	79	
	46	83	12	854	71	82	
	47	79	8.511 7802	885	73	85	
	48	76	8.511 7791	916	75	87	
	49	72	81	947	77	90	
	50	8.509 4269	8.511 7771	1.10979	2.2978	5.8593	
	51	65	60	1.11010	80	95	
	52	62	50	041	82	5.8598	
	53	58	40	072	84	5.8601	
	54	55	29	103	86	04	
	55	52	19	134	88	06	
	56	48	8.511 7709	166	89	09	
	57	45	8.511 7698	197	91	12	
	58	41	88	228	93	14	
	59	38	77	259	95	17	
	60	8.509 4234	8.511 7667	1.11290	2.2997	5.8620	7.849

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 27°.

Lat.	D	F	log A	log B	log C	log D	log E	log F
			diff. 1" = -0.06	diff. 1" = -0.18	diff. 1" = +0.61	diff. 1" = +0.08	diff. 1" = +0.06	diff. 10" = +1.1
27	00		8.509 4284	8.511 7667	1.11290	2.2997	5.8620	7.849
	1		31	57	331	2.2999	28	
	2		27	46	352	2.3001	26	
	3		24	36	373	03	23	
	4		20	25	414	04	21	
	05		17	15	445	06	24	
	6		13	8.511 7606	476	08	26	
	7		10	8.511 7594	507	10	29	
	8		08	84	538	12	42	
	9		08	73	569	14	44	
	10		8.509 4290	8.511 7582	1.11400	2.3015	5.8647	
	11		8.509 4196	56	631	17	50	
	12		53	42	662	19	53	
	13		50	32	693	21	56	
	14		46	21	724	23	58	
	15		42	11	755	24	61	
	16		39	8.511 7500	786	26	64	
	17		35	8.511 7490	817	28	66	
	18		32	79	848	30	69	
	19		28	68	879	32	72	
	20		8.509 4105	8.511 7486	1.11509	2.3033	5.8675	7.851
	21		61	48	940	35	77	
	22		56	37	1.11971	37	80	
	23		54	27	1.12002	39	83	
	24		51	16	082	41	86	
	25		47	8.511 7406	063	42	88	
	26		44	8.511 7395	094	44	91	
	27		40	85	125	46	94	
	28		37	74	156	48	97	
	29		33	64	186	50	5.8699	
	30		8.509 4130	8.511 7363	1.12217	2.3051	5.8702	
	31		26	43	248	53	05	
	32		23	32	278	55	08	
	33		19	22	309	57	10	
	34		16	11	340	58	13	
	35		12	8.511 7301	370	60	16	
	36		08	8.511 7290	401	62	19	
	37		05	80	432	64	22	
	38		8.509 4107	69	462	65	24	
	39		8.509 4098	58	493	67	27	
	40		8.509 4094	8.511 7248	1.12523	2.3069	5.8730	7.853
	41		91	37	554	70	33	
	42		87	27	584	72	35	
	43		84	16	615	74	38	
	44		80	8.511 7206	646	76	41	
	45		77	8.511 7195	676	78	44	
	46		73	84	707	79	46	
	47		70	74	737	81	49	
	48		66	63	768	83	52	
	49		63	53	798	85	55	
	50		8.509 4069	8.511 7142	1.12829	2.3086	5.8757	
	51		56	31	859	88	60	
	52		52	21	889	90	63	
	53		49	10	920	91	66	
	54		45	8.511 7100	950	93	69	
	55		41	8.511 7089	1.12981	95	72	
	56		38	78	1.13011	97	74	
	57		34	68	041	2.3099	77	
	58		31	57	072	2.3100	80	
	59		27	46	102	02	83	
	60		8.509 4024	8.511 7036	1.13182	2.3104	5.8785	7.855

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 28°.

Lat.		log A diff. 1"=−0.06	log B diff. 1"=−0.18	log C diff. 1"=+0.50	log D diff. 1"=+0.03	log E diff. 1"=+0.05	log F diff. 10"=+1.0
°	'						
28	00	8.509 4024	8.511 7036	1.13132	2.3104	5.8785	7.855
	1	20	25	163	06	88	
	2	17	14	193	07	91	
	3	13	8.511 7004	223	09	94	
	4	10	8.511 6993	254	10	97	
	05	06	82	284	12	5.8799	
	6	8.509 4002	72	314	14	5.8802	
	7	8.509 3999	61	345	16	05	
	8	95	50	375	17	08	
	9	92	40	405	19	11	
	10	8.509 3988	8.511 6929	1.13435	2.3121	5.8813	
	11	85	18	465	22	16	
	12	81	8.511 6908	496	24	19	
	13	78	8.511 6897	526	26	22	
	14	74	86	556	27	25	
	15	70	75	586	29	27	
	16	67	65	616	31	30	
	17	63	54	646	32	33	
	18	60	43	677	34	36	
	19	56	33	707	36	39	
	20	8.509 3952	8.511 6822	1.13737	2.3137	5.8841	7.857
	21	49	11	767	39	44	
	22	45	8.511 6800	797	41	47	
	23	42	8.511 6790	827	42	50	
	24	38	79	857	44	53	
	25	35	68	887	46	55	
	26	31	57	917	47	58	
	27	27	47	947	49	61	
	28	24	36	1.13977	51	64	
	29	20	25	1.14007	52	67	
	30	8.509 3917	8.511 6714	1.14037	2.3154	5.8870	
	31	13	8.511 6704	067	56	72	
	32	09	8.511 6693	097	57	75	
	33	06	82	127	59	78	
	34	8.509 3902	71	157	61	81	
	35	8.509 3899	61	187	62	84	
	36	95	50	217	64	87	
	37	92	39	247	65	89	
	38	88	28	277	67	92	
	39	84	17	307	69	95	
	40	8.509 3881	8.511 6607	1.14337	2.3170	5.8898	7.859
	41	77	8.511 6596	366	72	5.8901	
	42	73	85	396	74	04	
	43	70	74	426	75	06	
	44	66	63	456	77	09	
	45	63	52	486	78	12	
	46	59	42	516	80	15	
	47	55	31	545	82	18	
	48	52	20	575	83	21	
	49	48	8.511 6509	605	85	23	
	50	8.509 3845	8.511 6498	1.14635	2.3187	5.8926	
	51	41	87	664	88	29	
	52	37	76	694	90	32	
	53	34	66	724	91	35	
	54	30	55	754	93	38	
	55	26	44	783	95	40	
	56	23	33	813	96	43	
	57	19	22	843	98	46	
	58	16	11	872	2.3199	49	
	59	12	8.511 6400	902	2.3201	52	
	60	8.509 3808	8.511 6389	1.14932	2.3203	5.8955	7.861



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 29°.

Lat	log A diff. 1" = -0.08	log B diff. 1" = -0.18	log C diff. 1" = +0.49	log D diff. 1" = +0.08	log E diff. 1" = +0.06	log F diff. 1" = +0.8
29 00	8.509 3808	8.511 6389	1.14932	2.3208	5.8965	7.861
1	05	78	961	04	58	
2	8.509 3801	85	1.14931	08	60	
3	8.509 3797	87	1.15021	07	62	
4	94	46	050	09	66	
05	90	35	080	10	69	
6	84	24	100	12	72	
7	83	13	130	14	75	
8	79	8.511 6302	160	16	78	
9	76	8.511 6281	190	17	80	
10	8.509 3773	8.511 6260	1.15026	2.3219	5.8968	
11	68	89	207	20	86	
12	65	58	237	21	89	
13	61	47	316	23	92	
14	57	36	346	25	95	
15	54	25	375	26	5.8968	
16	50	14	405	28	5.9000	
17	46	8.511 6204	434	29	48	
18	42	8.511 6183	464	31	06	
19	39	82	493	32	09	
20	8.509 3765	8.511 6171	1.15523	2.3234	5.9012	7.863
21	33	69	523	35	16	
22	29	48	551	37	18	
23	24	38	611	39	21	
24	21	27	640	40	23	
25	17	16	670	42	26	
26	13	8.511 6106	699	43	29	
27	10	8.511 6084	728	45	32	
28	06	83	758	46	35	
29	8.509 3702	72	787	48	38	
30	8.509 3699	8.511 6061	1.15816	2.3249	5.9041	
31	96	50	846	51	43	
32	91	39	875	52	46	
33	88	28	904	54	49	
34	84	17	934	55	52	
35	80	8.511 6006	963	57	55	
36	77	8.511 5996	1.16992	58	58	
37	73	84	1.16021	60	61	
38	69	73	061	61	64	
39	66	61	090	63	67	
40	8.509 3662	8.511 5960	1.16109	2.3264	5.9069	7.864
41	58	59	138	66	72	
42	55	28	167	67	75	
43	51	17	197	69	78	
44	47	8.511 5906	226	70	81	
45	44	8.511 5896	255	72	84	
46	40	84	284	73	87	
47	36	73	313	75	90	
48	33	62	343	76	93	
49	29	51	372	78	96	
50	8.509 3625	8.511 5840	1.16401	2.3279	5.9098	
51	21	29	430	81	5.9101	
52	18	18	459	82	04	
53	14	8.511 5806	488	84	07	
54	10	8.511 5796	517	85	10	
55	07	84	546	87	13	
56	8.509 3608	73	575	88	16	
57	8.509 3599	62	604	90	19	
58	96	51	633	91	22	
59	92	40	663	93	25	
60	8.509 3565	8.511 5729	1.16692	2.3294	5.9127	7.866

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 30°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.48	log D diff. 1" = +0.02	log E diff. 1" = +0.06	log F diff. 10" = +0.7
°	'						
30	00	8.509 3588	8.511 5729	1.16692	2.3294	5.9127	7.866
	1	84	18	721	96	30	
	2	81	8.511 5706	750	97	33	
	3	77	8.511 5695	778	2.3298	36	
	4	73	84	807	2.3300	39	
	05	69	73	836	01	42	
	6	66	62	865	08	45	
	7	62	51	894	04	48	
	8	58	40	923	06	51	
	9	55	28	952	07	54	
	10	8.509 3551	8.511 5617	1.16981	2.3309	5.9157	
	11	47	8.511 5606	1.17010	10	59	
	12	43	8.511 5595	039	12	62	
	13	40	84	068	13	65	
	14	36	73	097	14	68	
	15	32	61	126	16	71	
	16	29	50	155	17	74	
	17	25	39	184	18	77	
	18	21	28	212	20	80	
	19	17	17	241	22	83	
	20	8.509 3514	8.511 5505	1.17270	2.3323	5.9186	7.867
	21	10	8.511 5494	299	24	89	
	22	06	83	328	26	92	
	23	8.509 3502	72	357	27	95	
	24	8.509 3499	61	385	29	5.9198	
	25	95	49	414	30	5.9200	
	26	91	38	443	32	03	
	27	88	27	472	33	06	
	28	84	16	500	34	09	
	29	80	8.511 5404	529	36	12	
	30	8.509 3476	8.511 5393	1.17558	2.3337	5.9215	
	31	72	82	587	39	18	
	32	69	71	615	40	21	
	33	65	59	644	41	24	
	34	61	48	673	43	27	
	35	57	37	701	44	30	
	36	54	26	730	46	33	
	37	50	14	759	47	36	
	38	46	8.511 5303	788	48	39	
	39	42	8.511 5292	816	50	42	
	40	8.509 3439	8.511 5281	1.17845	2.3351	5.9245	7.869
	41	35	69	874	53	48	
	42	31	58	902	54	51	
	43	27	47	931	55	53	
	44	24	35	959	57	56	
	45	20	24	1.17988	58	59	
	46	16	13	1.18017	59	62	
	47	12	8.511 5202	045	61	65	
	48	09	8.511 5190	074	62	68	
	49	05	79	102	64	71	
	50	8.509 3401	8.511 5168	1.18131	2.3365	5.9274	
	51	8.509 3397	56	160	66	77	
	52	94	45	188	68	80	
	53	90	34	217	69	83	
	54	86	22	245	70	86	
	55	82	11	274	72	89	
	56	78	8.511 5100	302	73	92	
	57	75	8.511 5088	331	74	95	
	58	71	77	359	76	5.9298	
	59	67	66	388	77	5.9301	
	60	8.509 3363	8.511 5054	1.18416	2.3379	5.9304	7.870

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 81°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.47	log D diff. 1" = +0.02	log E diff. 1" = +0.06	log F diff. 10' = +0.5
81 00	8.509 2302	8.511 3354	1.19416	2.3379	5.9304	7.870
1	00	43	445	80	07	
2	01	32	478	81	10	
3	02	30	501	82	13	
4	03	8.511 5009	530	84	16	
05	44	8.511 4998	558	85	19	
6	41	88	587	87	22	
7	87	75	614	88	25	
8	83	64	643	89	28	
9	29	52	672	91	31	
10	8.509 2325	8.511 4943	1.19700	2.3392	5.9304	
11	22	29	729	92	37	
12	18	18	757	95	39	
13	14	8.511 4907	786	96	42	
14	10	8.511 4895	812	97	45	
15	06	84	842	2.3390	48	
16	8.509 2308	72	870	2.3400	51	
17	8.509 2299	61	898	01	54	
18	95	50	927	05	57	
19	91	38	956	04	60	
20	8.509 2287	8.511 4827	1.19968	2.3405	5.9308	7.871
21	84	15	1.19912	06	63	
22	80	8.511 4804	040	08	66	
23	76	8.511 4792	068	09	69	
24	73	61	096	10	72	
25	68	70	126	12	75	
26	65	58	154	13	78	
27	61	47	181	14	81	
28	57	35	209	16	84	
29	53	24	238	17	87	
30	8.509 2249	8.511 4712	1.19286	2.3418	5.9308	
31	46	8.511 4701	294	20	96	
32	42	8.511 4690	322	21	5.9309	
33	38	78	351	22	5.9402	
34	34	67	379	23	05	
35	30	55	407	25	08	
36	26	44	435	26	11	
37	23	32	463	27	14	
38	19	21	491	29	17	
39	15	8.511 4609	520	30	20	
40	8.509 3211	8.511 4584	1.19548	2.3431	5.9423	7.872
41	07	86	576	32	26	
42	03	75	604	34	29	
43	8.509 3200	63	632	35	32	
44	8.509 3196	52	660	36	35	
45	92	40	688	37	38	
46	88	29	716	39	41	
47	84	17	744	40	44	
48	81	8.511 4506	772	41	47	
49	77	8.511 4494	800	43	50	
50	8.509 3173	8.511 4483	1.19828	2.3444	5.9453	
51	69	71	856	45	56	
52	65	60	884	46	59	
53	61	48	912	48	62	
54	57	37	940	49	65	
55	54	25	968	50	68	
56	50	14	1.19996	51	72	
57	46	8.511 4402	1.20024	53	75	
58	42	8.511 4391	052	54	78	
59	38	79	080	55	81	
60	8.509 3134	8.511 4368	1.20106	2.3450	5.9484	7.873

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 82°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.46	log D diff. 1" = +0.02	log E diff. 1" = +0.05	log F diff. 10' = +0.3
°	'						
32	00	8.509 3134	8.511 4368	1.20108	2.3456	5.9484	7.878
	1	31	56	186	57	87	
	2	27	44	164	59	90	
	3	23	38	192	60	98	
	4	19	21	220	61	96	
	05	15	8.511 4310	248	62	5.9499	
	6	11	8.511 4298	276	64	5.9502	
	7	07	87	304	65	05	
	8	04	75	332	66	08	
	9	8.509 3100	63	360	67	11	
	10	8.509 3096	8.511 4252	1.20387	2.3469	5.9514	
	11	92	40	415	70	17	
	12	88	29	443	71	20	
	13	84	17	471	72	23	
	14	80	8.511 4205	499	73	26	
	15	76	8.511 4194	527	75	29	
	16	73	82	555	76	32	
	17	69	71	582	77	35	
	18	65	59	610	78	38	
	19	61	47	638	79	41	
	20	8.509 3057	8.511 4136	1.20666	2.3481	5.9544	7.874
	21	53	24	694	82	47	
	22	49	13	722	83	50	
	23	46	8.511 4101	749	84	53	
	24	42	8.511 4089	777	85	56	
	25	38	78	805	87	60	
	26	34	66	833	88	63	
	27	30	54	860	89	66	
	28	26	43	888	90	69	
	29	22	31	916	91	72	
	30	8.509 3018	8.511 4020	1.20944	2.3493	5.9575	
	31	15	8.511 4008	971	94	78	
	32	11	8.511 3996	1.20999	95	81	
	33	07	85	1.21027	96	84	
	34	8.509 3003	73	054	97	87	
	35	8.509 2999	61	082	2.3499	90	
	36	95	50	110	2.3500	93	
	37	91	38	137	01	96	
	38	87	26	165	02	5.9599	
	39	83	15	193	03	5.9602	
	40	8.509 2980	8.511 3908	1.21220	2.3504	5.9605	7.875
	41	76	8.511 3891	248	06	08	
	42	72	79	276	07	11	
	43	68	68	303	08	15	
	44	64	56	331	09	18	
	45	60	44	358	10	21	
	46	56	33	386	11	24	
	47	52	21	414	13	27	
	48	48	8.511 3809	441	14	30	
	49	44	8.511 3798	469	15	33	
	50	8.509 2940	8.511 3786	1.21496	2.3516	5.9636	
	51	37	74	524	17	39	
	52	33	63	551	18	42	
	53	29	51	579	19	45	
	54	25	39	607	21	48	
	55	21	27	634	22	51	
	56	17	16	662	23	54	
	57	13	8.511 3704	689	24	58	
	58	09	8.511 3692	717	25	61	
	59	05	80	744	26	64	
	60	8.509 2901	8.511 3669	1.21772	2.3527	5.9667	7.875

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 33°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1" = -0.07		diff. 1" = -0.20		diff. 1" = +0.45		diff. 1" = +0.02		diff. 1" = +0.05		diff. 10' = +0.2	
23 00	8.508	2801	8.511	3069	1.21772		2.8527		5.9667		7.876	
1	8.508	2897		67		799		29		70		
2		94		45		827		30		73		
3		93		23		854		31		76		
4		86		22		882		32		79		
05		82	8.511	2610		909		33		82		
6		78	8.511	2598		937		34		85		
7		74		86		964		35		88		
8		70		75	1.21892		96			92		
9		68		65	1.22019		38			95		
10	8.508	2801	8.511	2551	1.22047		2.8537		5.9680			
11		58		59		074		40		5.9701		
12		54		39		101		41		04		
13		51		16		129		42		07		
14		47	8.511	2504		156		43		10		
15		43	8.511	2492		184		44		13		
16		39		80		211		45		16		
17		35		69		238		46		19		
18		31		57		266		48		22		
19		27		45		293		49		25		
20	8.508	2828	8.511	2488	1.22221		2.8550		5.9729		7.876	
21		19		31		345		51		32		
22		15	8.511	2416		376		52		35		
23		11	8.511	2396		408		53		38		
24		07		86		439		54		41		
25	8.508	2808		74		457		55		44		
26	8.508	2799		62		485		56		47		
27		55		51		512		57		50		
28		51		39		539		58		53		
29		48		27		567		60		57		
30	8.508	2784	8.511	3315	1.22594		2.8561		5.9780			
31		80	8.511	3303		521		62		63		
32		76	8.511	3291		548		63		66		
33		72		80		576		64		69		
34		68		68		603		65		72		
35		64		56		730		66		75		
36		60		44		757		67		78		
37		56		32		785		68		81		
38		52		20		812		69		85		
39		48	8.511	2209		839		70		88		
40	8.508	2744	8.511	3197	1.22866		2.8571		5.9791		7.876	
41		40		85		893		72		94		
42		36		73		921		73		5.9797		
43		32		61		948		75		5.9800		
44		28		49	1.22975		76			03		
45		24		37			77			06		
46		20		25	1.23002							
47		16		13		029		78		10		
48		12	8.511	3102		057		79		13		
49		08	8.511	3090		084		80		16		
50						111		81		19		
50	8.508	2704	8.511	3078	1.23128		2.8582		5.9822			
51	8.508	2701		66		165		83		25		
52	8.508	2697		54		192		84		28		
53		93		42		220		85		31		
54		89		30		247		86		35		
55		85		18		274		88		38		
56		81	8.511	3006		301		88		41		
57		77	8.511	2995		328		89		44		
58		73		83		355		90		47		
59		69		71		382		91		50		
60	8.508	2665	8.511	2959	1.23409		2.8592		5.9853		7.877	

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 84°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1"=−0.07		diff. 1"=−0.20		diff. 1"=+0.45		diff. 1"=+0.02		diff. 1"=+0.05		diff. 10"=+0.0	
34 00	8.509	2665	8.511	2959	1.23409		2.3592		5.9853		7.877	
1		61		47	437		98		57			
2		57		35	464		94		60			
3		53		23	491		95		63			
4		49	8.511	2911	518		96		66			
05		45	8.511	2899	545		97		69			
6		41		87	572		98		72			
7		37		75	599	2.3599			75			
8		33		63	626	2.3600			79			
9		29		51	653		01		82			
10	8.509	2625	8.511	2840	1.23680		2.3602		5.9885			
11		21		28	707		03		88			
12		17		16	734		04		91			
13		13	8.511	2804	761		05		94			
14		09	8.511	2792	788		06		5.9897			
15		05		80	815		07		5.9901			
16	8.509	2601		68	842		08		04			
17	8.509	2597		56	869		09		07			
18		93		44	896		10		10			
19		89		32	923		11		13			
20	8.509	2585	8.511	2720	1.23950		2.3612		5.9916		7.877	
21		81	8.511	2708	1.23977		13		19			
22		77	8.511	2696	1.24004		14		23			
23		73		84	031		15		26			
24		69		72	058		16		29			
25		65		60	085		17		32			
26		61		48	112		18		35			
27		57		36	139		19		38			
28		53		24	165		20		42			
29		49		12	192		21		45			
30	8.509	2545	8.511	2600	1.2 219		2.3 22		5.9948			
31		41	8.511	2588	246		23		51			
32		37		76	273		24		54			
33		33		64	300		25		57			
34		29		52	327		26		61			
35		25		40	354		27		64			
36		21		28	381		28		67			
37		17		16	408		29		70			
38		13	8.511	2504	434		30		73			
39		09	8.511	2492	461		31		76			
40	8.509	2505	8.511	2480	1.24488		2.3632		5.9980		7.877	
41	8.509	2501		68	515		33		83			
42	8.509	2497		56	542		34		86			
43		98		44	569		35		89			
44		89		32	595		36		92			
45		85		20	622		37		96			
46		81	8.511	2408	649		38		5.9999			
47		77	8.511	2396	676		39		6.0002			
48		73		84	703		40		05			
49		69		72	729				08			
50	8.509	2465	8.511	2360	1.24756		2.3642		6.0011			
51		61		48	783		48		15			
52		57		35	810		43		18			
53		53		23	837		44		21			
54		49	8.511	2311	863		45		24			
55		45	8.511	2299	890		46		27			
56		41		87	917		47		31			
57		37		75	944		48		34			
58		33		63	970		49		37			
59		29		51	1.24997		50		40			
60	8.509	2425	8.511	2289	1.25024		2.3651		6.0043		7.877	

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 35°.

Lat.	log A dist. 1" = -0.57	log B dist. 1" = -0.20	log C dist. 1" = +0.44	log D dist. 1" = +0.01	log E dist. 1" = +0.05	log F dist. 10" = +0.9
35 00	8.509 2485	8.511 2289	1.25024	2.2661	6.0048	7.877
1	21	27	080	52	47	
2	17	15	077	53	50	
3	13	8.511 2306	104	54	52	
4	09	8.511 2191	131	55	54	
05	05	78	157	56	56	
6	8.509 2401	66	134	56	58	
7	8.509 2396	54	211	57	58	
8	92	42	237	58	59	
9	88	30	264	59	72	
10	8.509 2384	8.511 2118	1.25001	2.2660	6.0076	
11	80	8.511 2106	317	61	73	
12	76	8.511 2094	344	62	75	
13	72	80	371	63	75	
14	68	70	397	64	76	
15	64	57	424	65	91	
16	60	45	451	66	96	
17	56	33	477	66	6.0088	
18	52	21	504	67	6.0101	
19	48	8.511 2009	531	68	94	
20	8.509 2344	8.511 1997	1.25007	2.2660	6.0107	7.877
21	40	86	554	70	11	
22	36	72	610	71	14	
23	32	60	637	72	17	
24	28	48	664	73	20	
25	24	36	690	74	23	
26	20	24	717	75	27	
27	16	12	743	76	30	
28	12	8.511 1900	770	76	32	
29	08	8.511 1887	796	77	35	
30	8.509 2294	8.511 1875	1.25023	2.2678	6.0140	
31	8.509 2300	63	850	79	43	
32	8.509 2296	51	876	80	46	
33	92	39	903	81	49	
34	87	27	929	82	52	
35	83	15	955	82	56	
36	79	8.511 1802	1.25082	83	59	
37	75	8.511 1790	1.26000	84	62	
38	71	78	985	85	65	
39	67	66	1002	86	69	
40	8.509 2263	8.511 1754	1.26068	2.2687	6.0172	7.877
41	59	41	115	88	75	
42	55	29	141	88	78	
43	51	17	168	89	81	
44	47	8.511 1706	194	90	85	
45	43	8.511 1693	221	91	88	
46	39	80	247	92	91	
47	35	68	274	93	94	
48	31	56	300	94	6.0196	
49	27	44	327	94	6.0201	
50	8.509 2222	8.511 1632	1.26153	2.2696	6.0204	
51	13	30	350	96	97	
52	11	8.511 1607	406	97	11	
53	10	8.511 1595	432	98	14	
54	06	83	459	99	17	
55	8.509 2202	71	485	2.2699	20	
56	8.509 2194	58	512	2.2700	24	
57	91	45	538	01	27	
58	90	34	565	02	30	
59	86	22	591	03	33	
60	8.509 2182	8.511 1510	1.26617	2.2704	6.0237	7.877

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 36°.

Lat.		log A diff. 1"=−0.07	log B diff. 1"=−0.20	log C diff. 1"=+0.41	log D diff. 1"=+0.01	log E diff. 1"=+0.05	log F diff. 10' = −0.2
°	'						
36	00	8.509 2182	8.511 1510	1.26617	2.3704	6.0237	7.877
	1	78	8.511 1497	644	04	40	
	2	74	85	670	05	43	
	3	70	73	697	06	46	
	4	65	61	723	07	50	
	05	61	48	749	08	53	
	6	57	36	776	09	56	
	7	53	24	802	09	59	
	8	49	8.511 1412	828	10	63	
	9	45	8.511 1399	855	11	66	
	10	8.509 2141	8.511 1387	1.26881	2.3712	6.0269	
	11	37	75	908	13	72	
	12	33	63	934	13	76	
	13	29	50	960	14	79	
	14	25	38	1.26987	15	82	
	15	21	26	1.27013	16	85	
	16	16	14	039	17	89	
	17	12	8.511 1301	066	17	92	
	18	08	8.511 1289	092	18	95	
	19	04	77	118	19	6.0299	
	20	8.509 2100	8.511 1265	1.27145	2.3720	6.0302	7.877
	21	8.509 2096	52	171	21	05	
	22	92	40	197	21	08	
	23	88	28	223	22	12	
	24	84	15	250	23	15	
	25	80	8.511 1203	276	24	18	
	26	75	8.511 1191	302	25	21	
	27	71	79	329	25	25	
	28	67	66	355	26	28	
	29	63	54	381	27	31	
	30	8.509 2059	8.511 1142	1.27407	2.3728	6.0334	
	31	55	29	434	29	38	
	32	51	17	460	29	41	
	33	47	8.511 1105	486	30	44	
	34	43	8.511 1092	512	31	48	
	35	39	80	539	32	51	
	36	35	68	565	32	54	
	37	30	56	591	33	57	
	38	26	43	617	34	61	
	39	22	31	644	35	64	
	40	8.509 2018	8.511 1019	1.27670	2.3735	6.0367	7.877
	41	14	8.511 1006	696	36	71	
	42	10	8.511 0994	722	37	74	
	43	06	82	748	38	77	
	44	8.509 2002	69	775	39	80	
	45	8.509 1998	57	801	39	84	
	46	93	45	827	40	87	
	47	89	32	853	41	90	
	48	85	20	879	42	94	
	49	81	8.511 0908	905	42	6.0397	
	50	8.509 1977	8.511 0895	1.27932	2.3743	6.0400	
	51	73	83	958	44	03	
	52	69	71	1.27984	45	07	
	53	65	58	1.28010	45	10	
	54	61	46	036	46	13	
	55	56	34	062	47	17	
	56	52	21	088	48	20	
	57	48	8.511 0809	114	48	23	
	58	44	8.511 0797	141	49	27	
	59	40	84	167	50	30	
	60	8.509 1936	8.511 0772	1.28193	2.3750	6.0433	7.876



TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 87°.

Lat.	log A dist. 1° = -0.07	log B dist. 1° = -0.21	log C dist. 1° = +0.43	log D dist. 1° = +0.91	log E dist. 1° = +0.95	log. F dist. 10° = -2.1
87 00	8.509 1936	8.511 0772	1.28198	2.3750	6.0000	7.876
1	32	80	219	51	37	
2	35	47	245	52	40	
3	38	36	271	53	43	
4	19	23	297	54	46	
05	15	8.511 0710	324	54	50	
6	11	8.511 0698	350	54	53	
7	07	38	376	54	56	
8	53.00 1808	73	402	54	59	
9	55.09 1800	61	428	57	62	
10	8.509 1806	8.511 0645	1.28454	2.3754	6.0000	
11	90	36	450	58	70	
12	86	33	506	59	73	
13	42	8.511 0611	582	60	76	
14	78	8.511 0599	608	61	80	
15	74	38	584	61	82	
16	70	74	610	62	86	
17	66	61	636	63	89	
18	62	49	662	73	92	
19	57	37	688	64	96	
20	8.509 1858	8.511 0594	1.28715	2.3765	6.0000	7.876
21	49	12	741	66	6.0000	
22	45	8.511 0500	767	66	06	
23	41	8.511 0487	793	67	09	
24	37	76	819	68	12	
25	33	62	845	68	16	
26	28	50	871	69	19	
27	24	37	897	70	22	
28	20	25	923	70	26	
29	16	13	949	71	29	
30	8.509 1812	8.511 0400	1.28975	2.3772	6.0583	
31	08	8.511 0388	1.29001	72	36	
32	04	76	927	73	39	
33	8.509 1800	63	953	74	42	
34	8.509 1795	51	979	74	46	
35	91	38	104	75	49	
36	87	26	130	76	52	
37	83	13	156	76	56	
38	79	8.511 0301	182	77	59	
39	75	8.511 0288	208	78	62	
40	8.509 1771	8.511 0276	1.29234	2.3779	6.0566	7.876
41	66	64	267	79	69	
42	62	51	286	80	73	
43	58	39	312	81	76	
44	54	26	338	81	79	
45	50	14	364	82	82	
46	46	8.511 0201	390	82	86	
47	41	8.511 0189	416	83	89	
48	37	78	442	84	92	
49	33	64	468	84	6.0566	
50	8.509 1729	8.511 0151	1.29494	2.3785	6.0600	
51	25	39	520	86	08	
52	21	26	546	86	08	
53	16	14	571	87	11	
54	12	8.511 0102	597	88	13	
55	08	8.511 0080	623	88	16	
56	04	77	649	89	19	
57	8.509 1700	64	675	90	22	
58	8.509 1696	52	701	90	26	
59	92	39	727	91	30	
60	8.509 1687	8.511 0027	1.29753	2.3792	6.0623	7.874

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 38°.

Lat.		log A diff. 1"=−0.07	log B diff. 1"=−0.21	log C diff. 1"=+0.43	log D diff. 1"=+0.01	log E diff. 1"=+0.06	log F diff. 10"=−0.4
°	'						
38	00	8.509 1687	8.511 0027	1.29753	2.3792	6.0633	7.874
	1	83	14	778	92	36	
	2	79	8.511 0002	804	93	40	
	3	75	8.510 9989	830	93	43	
	4	71	77	856	94	47	
	05	67	64	882	95	50	
	6	62	52	908	95	53	
	7	58	39	934	96	57	
	8	54	27	959	97	60	
	9	50	14	1.29985	97	63	
	10	8.509 1646	8.510 9902	1.30011	2.3796	6.0667	
	11	42	8.510 9889	087	2.3799	70	
	12	37	77	063	2.3800	73	
	13	33	64	089	00	77	
	14	29	52	114	01	80	
	15	25	39	140	01	84	
	16	21	27	166	02	87	
	17	17	14	192	02	90	
	18	12	8.510 9802	218	03	94	
	19	08	8.510 9789	243	03	6.0697	
	20	8.509 1604	8.510 9777	1.30269	2.3804	6.0701	7.874
	21	8.509 1600	64	296	05	04	
	22	8.509 1596	52	321	05	07	
	23	92	39	347	06	11	
	24	87	27	372	06	14	
	25	83	14	398	07	17	
	26	79	8.510 9701	424	08	21	
	27	75	8.510 9689	450	08	24	
	28	71	77	476	09	28	
	29	66	64	501	09	31	
	30	8.509 1562	8.510 9652	1.30527	2.3810	6.0734	
	31	58	39	553	11	38	
	32	54	27	579	11	41	
	33	50	14	604	12	44	
	34	46	8.510 9601	630	12	48	
	35	41	8.510 9589	656	13	51	
	36	37	76	682	14	55	
	37	33	64	707	14	58	
	38	29	51	733	15	61	
	39	25	39	759	15	65	
	40	8.509 1521	8.510 9526	1.30785	2.3816	6.0768	7.873
	41	16	14	810	16	72	
	42	12	8.510 9501	836	17	75	
	43	08	8.510 9488	862	18	78	
	44	04	76	887	18	82	
	45	8.509 1500	63	913	19	85	
	46	8.509 1495	51	939	19	89	
	47	91	38	965	20	92	
	48	87	26	1.30990	20	95	
	49	83	13	1.31016	21	6.0799	
	50	8.509 1479	8.510 9401	1.31042	2.3822	6.0802	
	51	75	8.510 9388	067	22	06	
	52	70	76	093	23	09	
	53	66	63	119	23	13	
	54	62	50	144	24	16	
	55	58	38	170	24	19	
	56	53	25	196	25	23	
	57	49	13	221	25	26	
	58	45	8.510 9300	247	26	30	
	59	41	8.510 9287	273	27	33	
	60	8.509 1437	8.510 9275	1.31299	2.3827	6.0836	7.872



TABLE 22.—Geodetic position computations—Continued.

LATITUDE 40°.

Lat.		log A diff. 1"=−0.07	log B diff. 1"=−0.21	log C diff. 1"=+0.42	log D diff. 1"=+0.01	log E diff. 1"=+0.06	log F diff. 10"=−0.7
°	'						
40	00	8.509 1184	8.510 8517	1.32833	2.3857	6.1043	7.869
	1	80	8.510 8506	858	58	47	
	2	76	8.510 8492	884	58	50	
	3	72	79	909	58	54	
	4	67	67	935	59	57	
	05	63	54	960	59	61	
	6	59	41	1.32986	60	64	
	7	55	29	1.33011	60	67	
	8	50	16	037	60	71	
	9	46	8.510 8403	062	61	74	
	10	8.509 1142	8.510 8391	1.33088	2.3861	6.1078	
	11	38	78	113	62	81	
	12	34	65	139	62	85	
	13	29	53	164	63	88	
	14	25	40	189	63	92	
	15	21	27	215	64	95	
	16	17	15	240	64	6.1099	
	17	12	8.510 8302	266	65	6.1102	
	18	08	8.510 8289	291	65	06	
	19	04	77	317	65	09	
	20	8.509 1100	8.510 8264	1.33342	2.3866	6.1113	7.867
	21	8.509 1096	51	368	66	16	
	22	91	38	393	67	20	
	23	87	26	418	67	23	
	24	83	13	444	68	27	
	25	79	8.510 8200	469	68	30	
	26	74	8.510 8188	495	68	34	
	27	70	75	520	69	37	
	28	66	62	546	69	41	
	29	62	50	571	70	44	
	30	8.509 1067	8.510 8137	1.33596	2.3870	6.1148	
	31	53	24	622	70	51	
	32	49	8.510 8111	647	71	55	
	33	45	8.510 8099	673	71	58	
	34	41	86	698	72	62	
	35	36	73	723	72	65	
	36	32	61	749	72	69	
	37	28	48	774	73	72	
	38	24	35	800	73	76	
	39	19	23	825	74	79	
	40	8.509 1015	8.510 8010	1.33850	2.3874	6.1183	7.866
	41	11	8.510 7997	876	74	86	
	42	07	84	901	75	90	
	43	8.509 1002	72	926	75	93	
	44	8.509 0998	59	952	76	6.1197	
	45	94	46	1.33977	76	6.1200	
	46	90	33	1.34003	76	04	
	47	85	21	028	77	07	
	48	81	8.510 7908	053	77	11	
	49	77	8.510 7895	079	77	15	
	50	8.509 0973	8.510 7883	1.34104	2.3878	6.1218	
	51	68	70	129	78	22	
	52	64	57	155	79	25	
	53	60	44	180	79	29	
	54	56	32	206	79	32	
	55	52	19	231	80	36	
	56	47	8.510 7806	256	80	39	
	57	43	8.510 7793	282	80	43	
	58	39	81	307	81	46	
	59	34	68	332	81	50	
	60	8.509 0930	8.510 7755	1.34358	2.3882	6.1253	7.864

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 41°.

Lat.		log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.01	log E diff. 1" = +0.06	log F diff. 10" = -0.8
°	'						
41	00	8.509 0880	8.510 7755	1.34358	2.3882	6.1258	7.861
	1	26	42	383	82	57	
	2	22	30	408	82	60	
	3	18	17	434	83	64	
	4	13	8.510 7704	459	83	67	
	05	09	8.510 7691	484	83	71	
	6	05	79	510	84	75	
	7	8.509 0800	66	535	84	78	
	8	8.509 0896	58	560	84	82	
	9	92	40	586	85	85	
	10	8.509 0888	8.510 7628	1.34611	2.3885	6.1269	
	11	83	15	636	85	92	
	12	79	8.510 7602	662	86	96	
	13	75	8.510 7590	687	86	6.1299	
	14	71		712	87	6.1308	
	15	67	64	738	87	06	
	16	62	51	763	87	10	
	17	58	39	788	88	14	
	18	54	26	814	88	17	
	19	49	13	839	88	21	
	20	8.509 0845	8.510 7500	1.34864	2.3889	6.1324	7.863
	21	41	8.510 7488	860	89	28	
	22	37	75	915	89	31	
	23	32	62	940	90	35	
	24	28	49	965	90	38	
	25	24	36	1.34991	90	42	
	26	20	24	1.35016	91	46	
	27	15	8.510 7411	041	91	49	
	28	11	8.510 7398	066	91	53	
	29	07	86	092	91	56	
	30	8.509 0803	8.510 7373	1.35117	2.3892	6.1360	
	31	8.509 0798	60	142	92	63	
	32	94	47	168	92	67	
	33	90	34	193	93	70	
	34	86	22	218	93	74	
	35	81	8.510 7309	243	93	78	
	36	77	8.510 7296	269	94	81	
	37	73	83	294	94	85	
	38	69	70	319	94	88	
	39	64	58	345	95	92	
	40	8.509 0760	8.510 7245	1.35370	2.3895	6.1395	7.861
	41	56	32	395	95	6.1399	
	42	52	19	420	96	6.1403	
	43	47	8.510 7207	446	96	06	
	44	43	8.510 7194	471	96	10	
	45	39	81	496	97	13	
	46	35	68	522	97	17	
	47	30	55	547	97	20	
	48	26	43	572	97	24	
	49	22	30	597	98	28	
	50	8.509 0718	8.510 7117	1.35623	2.3898	6.1431	
	51	13	8.510 7104	648	98	35	
	52	09	8.510 7091	673	98	38	
	53	05	79	698	99	42	
	54	8.509 0700	66	723	99	46	
	55	8.509 0696	53	749	2.3899	49	
	56	92	40	774	2.3900	53	
	57	88	27	799	00	56	
	58	83	15	824	00	60	
	59	79	8.510 7002	850	00	63	
	60	8.509 0675	8.510 6989	1.35875	2.3901	6.1467	7.860

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 42°.

Lat.		log A diff. 1"=−0.07	log B diff. 1"=−0.21	log C diff. 1"=+0.42	log D diff. 1"=+0.00	log E diff. 1"=+0.06	log F diff. 10' = −0.9
°	'						
42	00	8.509 0675	8.510 6989	1.35875	2.3901	6.1467	7.860
	1	71	76	900	01	71	
	2	66	64	925	01	74	
	3	62	51	951	01	78	
	4	58	38	1.35976	02	81	
	05	54	25	1.36001	02	85	
	6	49	12	026	02	89	
	7	45	8.510 6900	052	08	92	
	8	41	8.510 6887	077	03	96	
	9	36	74	102	03	6.1499	
	10	8.509 0632	8.510 6861	1.36127	2.3903	6.1503	
	11	28	48	152	04	07	
	12	24	36	178	04	10	
	13	19	23	203	04	14	
	14	15	8.510 6810	228	04	17	
	15	11	8.510 6797	253	05	21	
	16	07	84	278	05	25	
	17	8.509 0602	72	304	05	28	
	18	8.509 0598	59	329	05	32	
	19	94	46	354	06	35	
	20	8.509 0590	8.510 6783	1.36379	2.3906	6.1539	7.858
	21	85	20	404	06	43	
	22	81	8.510 6707	430	06	46	
	23	77	8.510 6695	455	07	50	
	24	72	82	480	07	54	
	25	68	69	505	07	57	
	26	64	56	530	07	61	
	27	60	43	556	07	64	
	28	55	31	581	08	68	
	29	51	18	606	08	72	
	30	8.509 0547	8.510 6605	1.36631	2.3908	6.1575	
	31	43	8.510 6592	656	08	79	
	32	38	79	682	09	83	
	33	34	66	707	09	86	
	34	30	54	732	09	90	
	35	25	41	757	09	93	
	36	21	28	782	10	6.1597	
	37	17	15	808	10	6.1601	
	38	13	8.510 6502	833	10	04	
	39	08	8.510 6490	858	10	08	
	40	8.509 0504	8.510 6477	1.36883	2.3910	6.1612	7.856
	41	8.509 0500	64	908	11	15	
	42	8.509 0496	51	934	11	19	
	43	91	38	959	11	22	
	44	87	25	1.36984	11	26	
	45	83	13	1.37009	12	30	
	46	78	8.510 6400	034	12	33	
	47	74	8.510 6387	059	12	37	
	48	70	74	085	12	41	
	49	66	61	110	12	44	
	50	8.509 0461	8.510 6348	1.37185	2.3913	6.1648	
	51	57	36	160	13	52	
	52	53	23	185	13	55	
	53	48	8.510 6310	210	13	59	
	54	44	8.510 6297	235	13	63	
	55	40	84	261	14	66	
	56	36	71	286	14	70	
	57	31	59	311	14	73	
	58	27	46	336	14	77	
	59	23	33	361	14	81	
	60	8.509 0419	8.510 6220	1.37386	2.3914	6.1684	7.854

Table 2. Summary of posttest results and associated statistical significance.

LARRY M. C.

行	品名	数量	単価	金額	備考
1	...	...	...	...	...
2	...	...	...	...	...
3	...	...	...	...	...
4	...	...	...	...	...
5	...	...	...	...	...
6	...	...	...	...	...
7	...	...	...	...	...
8	...	...	...	...	...
9	...	...	...	...	...
10	...	...	...	...	...
11	...	...	...	...	...
12	...	...	...	...	...
13	...	...	...	...	...
14	...	...	...	...	...
15	...	...	...	...	...
16	...	...	...	...	...
17	...	...	...	...	...
18	...	...	...	...	...
19	...	...	...	...	...
20	...	...	...	...	...
21	...	...	...	...	...
22	...	...	...	...	...
23	...	...	...	...	...
24	...	...	...	...	...
25	...	...	...	...	...
26	...	...	...	...	...
27	...	...	...	...	...
28	...	...	...	...	...
29	...	...	...	...	...
30	...	...	...	...	...
31	...	...	...	...	...
32	...	...	...	...	...
33	...	...	...	...	...
34	...	...	...	...	...
35	...	...	...	...	...
36	...	...	...	...	...
37	...	...	...	...	...
38	...	...	...	...	...
39	...	...	...	...	...
40	...	...	...	...	...
41	...	...	...	...	...
42	...	...	...	...	...
43	...	...	...	...	...
44	...	...	...	...	...
45	...	...	...	...	...
46	...	...	...	...	...
47	...	...	...	...	...
48	...	...	...	...	...
49	...	...	...	...	...
50	...	...	...	...	...
51	...	...	...	...	...
52	...	...	...	...	...
53	...	...	...	...	...
54	...	...	...	...	...
55	...	...	...	...	...
56	...	...	...	...	...
57	...	...	...	...	...
58	...	...	...	...	...
59	...	...	...	...	...
60	...	...	...	...	...

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 44°.

Lat.		log A diff. 1"=−0.07	log B. diff. 1"=−0.21	log C diff. 1"=+0.42	log D diff. 1"=+0.00	log E diff. 1"=+0.06	log F diff. 10' =1.2
°	'						
44	00	8.509 0162	8.510 5449	1.38894	2.3923	6.1905	7.848
	1	57	36	919	23	09	
	2	53	23	945	23	13	
	3	49	8.510 5411	970	23	17	
	4	44	8.510 5398	1.38995	23	20	
	05	40	85	1.39020	23	24	
	6	36	72	045	24	28	
	7	31	59	070	24	31	
	8	27	46	095	24	35	
	9	23	33	120	24	39	
	10	8.509 0119	8.510 5320	1.39145	2.3924	6.1943	
	11	14	8.510 5307	171	24	46	
	12	10	8.510 5295	196	24	50	
	13	06	82	221	24	54	
	14	8.509 0102	69	246	24	58	
	15	8.509 0097	56	271	24	61	
	16	93	43	296	24	65	
	17	89	30	321	24	69	
	18	84	18	346	24	72	
	19	80	8.510 5205	371	25	76	
	20	8.509 0076	8.510 5192	1.39396	2.3925	6.1980	7.845
	21	72	79	422	25	84	
	22	67	66	447	25	87	
	23	63	53	472	25	91	
	24	59	40	497	25	95	
	25	54	28	522	25	6.1999	
	26	50	15	547	25	6.2002	
	27	46	8.510 5102	572	25	06	
	28	42	8.510 5089	597	25	10	
	29	37	76	623	25	14	
	30	8.509 0033	8.510 5063	1.39648	2.3925	6.2017	
	31	29	50	673	25	21	
	32	24	37	698	25	25	
	33	20	25	723	25	29	
	34	16	8.510 5012	748	25	32	
	35	11	8.510 4999	773	25	36	
	36	07	86	798	26	40	
	37	8.509 0003	73	823	26	44	
	38	8.508 9999	60	848	26	47	
	39	94	47	873	26	51	
	40	8.508 9990	8.510 4935	1.39898	2.3926	6.2055	7.843
	41	86	22	924	26	59	
	42	81	8.510 4909	949	26	62	
	43	77	8.510 4896	974	26	66	
	44	73	83	1.39999	26	70	
	45	69	70	1.40024	26	74	
	46	64	57	049	26	77	
	47	60	44	074	26	81	
	48	56	32	099	26	85	
	49	51	19	124	26	89	
	50	8.508 9947	8.510 4806	1.40149	2.3926	6.2092	
	51	43	8.510 4793	174	26	6.2096	
	52	39	80	200	26	6.2100	
	53	34	67	225	26	04	
	54	30	54	250	26	08	
	55	26	41	275	26	11	
	56	21	29	300	26	15	
	57	17	16	325	26	19	
	58	13	8.510 4703	350	26	23	
	59	09	8.510 4690	375	26	27	
	60	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840



TABLE 22.—Geodetic position computations—continued.

## LATITUDE 45°

Lat.	log A dlat. 1" = -0.87	log B dlat. 1" = -0.21	log C dlat. 1" = +0.42	log D dlat. 1" = -0.89	log E dlat. 1" = +0.66	log F dlat. 1" = 1.3
45 00	A. 508 9884	A. 510 4677	1. 40489	2. 3826	6. 2129	7. 600
01	A. 508 9889	46	485	26	24	
02	A. 508 9894	51	489	26	24	
03	98	56	475	26	47	
04	47	56	501	26	51	
05	65	12	505	26	49	
06	78	A. 510 4680	512	26	53	
07	74	A. 510 4687	576	26	57	
08	79	74	601	26	61	
09	86	61	626	26	64	
10	A. 508 9891	A. 510 4691	1. 4052	2. 3826	6. 2129	
11	57	58	676	26	72	
12	52	53	701	26	76	
13	48	A. 510 4610	727	26	80	
14	44	A. 510 4697	752	26	83	
15	40	54	777	26	87	
16	36	71	802	26	91	
17	31	59	827	26	95	
18	27	46	852	26	6. 2139	
19	23	33	877	26	6. 2202	
20	A. 508 9819	A. 510 4420	1. 40602	2. 3826	6. 2136	7. 620
21	14	A. 510 4487	927	26	10	
22	10	A. 510 4394	952	26	14	
23	06	81	1. 40678	26	18	
24	A. 508 9801	68	1. 43001	26	21	
25	A. 508 9797	54	826	26	25	
26	98	43	852	26	29	
27	88	30	878	26	33	
28	84	17	903	26	37	
29	80	A. 510 4304	128	26	40	
30	A. 508 9776	A. 510 4291	1. 41150	2. 3824	6. 2244	
31	71	28	178	26	44	
32	67	65	203	26	48	
33	63	52	229	26	52	
34	58	40	254	26	56	
35	54	27	279	26	60	
36	50	14	304	26	64	
37	46	A. 510 4301	329	26	67	
38	41	A. 510 4198	354	26	71	
39	37	75	379	26	75	
40	A. 508 9733	A. 510 4162	1. 41604	2. 3825	6. 2283	7. 686
41	28	49	429	26	88	
42	24	37	454	26	90	
43	20	24	479	26	94	
44	16	A. 510 4111	505	26	6. 2295	
45	11	A. 510 4098	530	26	6. 2302	
46	07	65	555	26	06	
47	A. 508 9703	72	580	26	09	
48	A. 508 9698	60	605	26	13	
49	94	47	630	26	17	
50	A. 508 9689	A. 510 4084	1. 41655	2. 3825	6. 2321	
51	85	21	650	26	25	
52	81	A. 510 4008	705	26	29	
53	77	A. 510 3985	731	26	33	
54	72	82	756	24	36	
55	68	69	781	24	40	
56	64	57	806	24	44	
57	60	44	831	24	48	
58	56	31	856	24	52	
59	51	18	881	24	56	
60	A. 508 9647	A. 510 3905	1. 41906	2. 3824	6. 2359	7. 692

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 46°.

Lat.		log A diff. 1"=−0.07	log B diff. 1"=−0.21	log C diff. 1"=+0.42	log D diff. 1"=−0.00	log E diff. 1"=+0.06	log F diff. 10"=−1.4
°	'						
46	00	8.508 9647	8.510 3905	1.41906	2.3924	6.2359	7.832
	1	43	8.510 3882	961	24	63	
	2	38	79	957	24	67	
	3	34	67	1.41982	24	71	
	4	30	54	1.42007	24	75	
	05	25	41	082	24	79	
	6	21	28	057	23	82	
	7	17	15	082	23	86	
	8	13	8.510 3802	107	23	90	
	9	08	8.510 3789	182	23	94	
	10	8.508 9604	8.510 3776	1.42157	2.3923	6.2398	
	11	8.508 9600	64	183	23	6.2402	
	12	8.508 9595	51	208	23	06	
	13	91	38	233	23	09	
	14	87	25	258	23	13	
	15	83	8.510 3712	283	23	17	
	16	78	8.510 3699	308	23	21	
	17	74	86	333	22	25	
	18	70	74	358	22	29	
	19	65	61	384	22	33	
	20	8.508 9561	8.510 3648	1.42409	2.3922	6.2436	7.830
	21	57	35	434	22	40	
	22	53	22	459	22	44	
	23	48	8.510 3609	484	22	48	
	24	44	8.510 3596	509	22	52	
	25	40	84	534	22	56	
	26	35	71	559	21	60	
	27	31	58	584	21	64	
	28	27	45	610	21	67	
	29	23	32	635	21	71	
	30	8.508 9518	8.510 3519	1.42660	2.3921	6.2475	
	31	14	8.510 3506	685	21	79	
	32	10	8.510 3494	710	21	83	
	33	05	81	735	21	87	
	34	8.508 9501	68	760	20	91	
	35	8.508 9497	55	786	20	95	
	36	93	42	811	20	6.2499	
	37	88	29	836	20	6.2502	
	38	84	17	861	20	06	
	39	80	8.510 3404	886	20	10	
	40	8.508 9475	8.510 3391	1.42911	2.3920	6.2514	7.827
	41	71	78	936	19	18	
	42	67	65	961	19	22	
	43	63	52	1.42967	19	26	
	44	58	39	1.43012	19	30	
	45	54	27	037	19	34	
	46	50	14	062	19	38	
	47	45	8.510 3301	087	19	41	
	48	41	8.510 3288	112	18	45	
	49	37	75	137	18	49	
	50	8.508 9433	8.510 3262	1.43163	2.3918	6.2553	
	51	28	49	188	18	57	
	52	24	37	213	18	61	
	53	20	24	238	18	65	
	54	16	8.510 3211	263	18	69	
	55	11	8.510 3198	288	17	73	
	56	07	85	314	17	77	
	57	8.508 9403	72	339	17	81	
	58	8.508 9398	60	364	17	84	
	59	94	47	389	17	88	
	60	8.508 9390	8.510 3134	1.43414	2.3917	6.2592	7.824

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 47°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.07	log F diff. 1" = -1.1
47 00	N. 508 9390	N. 510 3134	1 43414	2.3917	6.2692	7.824
1	86	21	439	16	6.2598	
2	81	N. 510 3109	465	16	6.2600	
3	77	N. 510 3085	490	16	04	
4	73	82	515	16	08	
06	68	70	540	16	12	
6	64	57	565	16	16	
7	60	44	590	15	20	
8	56	31	615	15	24	
9	51	18	641	15	28	
10	N. 508 9347	N. 510 3065	1 43066	2.3915	6.2682	
11	43	N. 510 2993	691	15	36	
12	38	80	716	14	39	
13	34	67	741	14	43	
14	30	54	766	14	47	
16	26	41	792	14	51	
16	21	28	817	14	55	
17	17	16	842	13	59	
18	13	N. 510 2903	867	13	63	
19	09	N. 510 2890	892	13	67	
20	N. 508 9304	N. 510 2877	1 42917	2.3913	6.2671	7.823
21	N. 508 9300	64	943	13	75	
22	N. 508 9296	51	968	12	79	
23	91	39	1.43998	12	83	
24	87	26	1.44018	12	87	
26	83	13	043	12	91	
26	79	N. 510 2800	069	12	95	
27	74	N. 510 2787	094	11	6.2669	
28	70	74	119	11	6.2702	
29	66	62	144	11	06	
30	N. 508 9261	N. 510 2749	1.44169	2.3911	6.2710	
31	57	36	196	11	14	
32	53	23	220	10	18	
33	49	N. 510 2710	245	10	22	
34	44	N. 510 2708	270	10	26	
36	40	86	296	10	30	
36	36	72	321	10	34	
37	32	59	346	09	38	
38	27	46	371	09	42	
39	23	33	396	09	46	
40	N. 508 9219	N. 510 2621	1.44421	2.3909	6.2750	7.817
41	14	N. 510 2608	447	08	64	
42	10	N. 510 2595	472	08	58	
43	06	62	497	08	62	
44	N. 508 9202	69	522	08	66	
45	N. 508 9197	57	547	07	70	
46	93	44	573	07	74	
47	89	31	598	07	78	
48	84	18	623	07	82	
49	80	N. 510 2506	648	07	86	
50	N. 508 9176	N. 510 2493	1 44678	2.3906	6.2790	
51	72	80	679	06	94	
52	67	67	704	06	6.2798	
53	63	54	729	06	6.2802	
54	59	41	754	06	06	
55	56	28	800	05	10	
56	50	16	825	05	14	
57	46	N. 510 2403	850	05	18	
58	42	N. 510 2390	875	04	22	
59	38	77	900	04	26	
60	N. 508 9133	N. 510 2364	1 44926	2.3904	6.2830	7.814

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 48°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.00	log E diff. 1" = +0.07	log F diff. 10" = -1.7
00	8.508 9133	8.510 2364	1.44926	2.3904	6.2830	7.814
1	29	52	951	04	34	
2	25	39	1.44976	03	38	
3	20	26	1.45001	03	42	
4	16	13	027	03	46	
5	12	8.510 2300	052	02	50	
6	08	8.510 2288	077	02	54	
7	8.508 9103	75	102	02	58	
8	8.508 9099	62	128	02	62	
9	95	49	153	01	66	
10	8.508 9091	8.510 2236	1.45178	2.3901	6.2870	
11	86	24	203	01	74	
12	82	8.510 2211	229	01	78	
13	78	8.510 2198	254	00	82	
14	74	85	279	00	86	
15	69	72	304	2.3900	90	
16	65	60	330	2.3899	94	
17	61	47	355	99	6.2898	
18	57	34	380	99	6.2902	
19	52	21	406	99	06	
20	8.508 9048	8.510 2108	1.45431	2.3898	6.2910	7.811
21	44	8.510 2096	456	98	14	
22	39	83	481	98	18	
23	35	70	507	97	22	
24	31	57	532	97	26	
25	27	45	557	97	30	
26	22	32	582	97	34	
27	18	19	608	96	38	
28	14	8.510 2006	633	96	42	
29	10	8.510 1993	658	96	46	
30	8.508 9005	8.510 1981	1.45683	2.3895	6.2950	
31	8.508 9001	68	709	95	54	
32	8.508 8997	55	734	95	58	
33	93	42	759	95	62	
34	88	30	785	94	66	
35	84	17	810	94	70	
36	80	8.510 1904	835	94	74	
37	76	8.510 1891	861	93	78	
38	71	78	886	93	82	
39	67	66	911	93	86	
40	8.508 8963	8.510 1853	1.45937	2.3892	6.2990	7.807
41	59	40	962	92	94	
42	54	27	1.45987	92	6.2998	
43	50	15	1.46012	91	6.3002	
44	46	8.510 1802	038	91	06	
45	41	8.510 1789	063	91	10	
46	37	76	088	90	15	
47	33	64	114	90	19	
48	29	51	139	90	23	
49	24	38	164	89	27	
50	8.508 8920	8.510 1725	1.46190	2.3889	6.3031	
51	16	13	215	89	35	
52	12	8.510 1700	240	88	39	
53	08	8.510 1687	266	88	43	
54	8.508 8903	74	291	88	47	
55	8.508 8899	62	316	87	51	
56	95	49	342	87	55	
57	90	36	367	87	59	
58	86	23	392	86	63	
59	82	8.510 1610	418	86	67	
60	8.508 8878	8.510 1598	1.46443	2.3886	6.3071	7.804

TABLE 22.—*Geodetic position computations—Continued.*LATITUDE  $\phi'$ 

Lat.	log A dlat. $1'' = -0.67$	log B dlat. $1'' = -0.21$	log C dlat. $1'' = +0.42$	log D dlat. $1'' = -0.01$	log E dlat. $1'' = +0.57$	log F dlat. $1'' = 1.3$
00	8.500 7076	8.500 1509	1.96643	2.3006	6.2057	7.894
01	73	08	625	86	75	
02	09	72	604	85	79	
03	06	39	583	85	82	
04	61	47	561	84	86	
05	57	34	539	84	87	
06	52	21	516	84	8.2094	
07	00	8.500 1500	493	83	8.2100	
08	44	8.500 1496	466	83	84	
09	39	08	471	82	86	
10	8.500 8936	8.500 1479	1.40006	2.2902	6.2112	
11	33	58	722	82	86	
12	27	45	707	81	89	
13	23	32	773	81	94	
14	18	19	730	81	99	
15	14	8.500 1467	694	80	97	
16	10	8.500 1394	649	80	97	
17	06	01	674	80	61	
18	8.500 8801	08	600	79	65	
19	8.500 8797	56	525	79	69	
20	8.500 8798	8.500 1343	1.40060	2.2878	6.2108	7.890
21	89	30	1.40074	78	57	
22	84	17	1.47001	78	61	
23	80	8.500 1306	826	77	65	
24	76	8.500 1282	682	77	69	
25	72	79	677	77	73	
26	67	67	603	76	78	
27	63	54	528	76	82	
28	59	41	458	75	86	
29	56	29	379	75	90	
30	8.500 8750	8.500 1216	1.47204	2.2875	6.2194	
31	46	8.500 1203	230	74	6.2196	
32	42	8.500 1190	256	74	6.2202	
33	38	76	281	73	06	
34	33	63	306	73	10	
35	29	52	331	73	15	
36	25	39	357	72	19	
37	21	27	383	72	23	
38	16	14	408	71	27	
39	12	8.500 1101	433	71	31	
40	8.500 8708	8.500 1088	1.47450	2.2871	6.2205	7.796
41	04	76	464	70	39	
42	8.500 8700	63	509	70	43	
43	8.500 8685	50	535	69	47	
44	91	38	560	69	52	
45	87	25	586	68	56	
46	82	12	611	68	60	
47	78	8.500 1000	637	68	64	
48	74	8.500 0987	662	67	68	
49	70	74	688	67	72	
50	8.500 8606	8.500 0962	1.47713	2.2866	6.2276	
51	61	49	738	66	81	
52	57	36	764	66	85	
53	53	23	789	65	89	
54	49	8.500 0911	815	65	93	
55	45	8.500 0898	840	64	6.2297	
56	40	10	866	64	6.2301	
57	36	23	891	63	06	
58	32	10	917	63	09	
59	28	48	942	63	14	
60	8.500 8623	8.500 0805	1.47968	2.2862	6.2318	7.792

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 50°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1'' = -0.07		diff. 1'' = -0.21		diff. 1'' = +0.43		diff. 1'' = -0.01		diff. 1'' = +0.07		diff. 10' = -2.0	
50 00	8.508 8623		8.510 0835		1.47968		2.3862		6.3318		7.792	
1	19		22		1.47998		62		22			
2	15		8.510 0809		1.48019		61		26			
3	11		8.510 0797		044		61		30			
4	06		84		670		60		34			
05	8.508 8602		71		095		60		39			
6	8.508 8598		59		121		60		43			
7	94		46		146		59		47			
8	90		33		172		59		51			
9	85		21		197		58		55			
10	8.508 8581		8.510 0708		1.48223		2.3858		6.3359			
11	77		8.510 0696		248		57		63			
12	73		83		274		57		68			
13	68		70		299		56		72			
14	64		57		325		56		76			
15	60		45		350		55		80			
16	56		32		376		55		84			
17	52		19		401		55		88			
18	47		8.510 0607		427		54		93			
19	43		8.510 0594		452		54		6.3397			
20	8.508 8589		8.510 0581		1.48478		2.3853		6.3401		7.788	
21	35		69		504		53		05			
22	30		56		529		52		09			
23	26		43		555		52		14			
24	22		31		580		51		18			
25	18		18		606		51		22			
26	14		8.510 0505		631		50		26			
27	09		8.510 0493		657		50		30			
28	05		80		682		49		34			
29	8.508 8501		67		708		49		39			
30	8.508 8497		8.510 0455		1.48734		2.3848		6.3443			
31	93		42		759		48		47			
32	88		29		785		47		51			
33	84		17		810		47		55			
34	80		8.510 0404		836		46		60			
35	76		8.510 0392		861		46		64			
36	71		79		887		45		68			
37	67		66		913		45		72			
38	63		54		938		44		76			
39	59		41		964		44		81			
40	8.508 8455		8.510 0328		1.48989		2.3843		6.3485		7.784	
41	50		16		1.49015		43		89			
42	46		8.510 0303		041		42		93			
43	42		8.510 0291		066		42		6.3497			
44	38		78		092		41		6.3502			
45	34		65		117		41		06			
46	29		53		143		40		10			
47	25		40		169		40		14			
48	21		27		194		39		18			
49	17		15		220		39		23			
50	8.508 8413		8.510 0202		1.49246		2.3838		6.3527			
51	08		8.510 0190		271		38		31			
52	04		77		297		37		35			
53	8.508 8400		64		322		37		40			
54	8.508 8396		52		348		36		44			
55	92		39		374		36		48			
56	87		27		399		35		52			
57	83		14		425		35		56			
58	79		8.510 0101		451		34		61			
59	75		8.510 0089		476		34		65			
60	8.508 8371		8.510 0076		1.49502		2.3833		6.3569		7.780	

TABLE II. *Geodesic position computations—Continued.*

LATITUDE 43°

Lat.	log A dist 1° = 4.07	log B dist 1° = 4.02	log C dist 1° = 4.03	log D dist 1° = 4.01	log E dist 1° = 4.07	log F dist 1° = 4.12
51						
00	4.509 8271	4.512 0028	1.49502	2.2923	6.3690	7.70
01	86	64	529	23	73	
02	87	63	530	22	73	
03	88	62	531	21	72	
04	89	61	532	20	71	
05	90	60	533	19	70	
06	91	59	534	18	69	
07	92	58	535	17	68	
08	93	57	536	16	67	
09	94	56	537	15	66	
10	95	55	538	14	65	
11	96	54	539	13	64	
12	97	53	540	12	63	
13	98	52	541	11	62	
14	99	51	542	10	61	
15	00	50	543	9	60	
16	01	49	544	8	59	
17	02	48	545	7	58	
18	03	47	546	6	57	
19	04	46	547	5	56	
20	05	45	548	4	55	
21	06	44	549	3	54	
22	07	43	550	2	53	
23	08	42	551	1	52	
24	09	41	552	0	51	
25	10	40	553	9	50	
26	11	39	554	8	49	
27	12	38	555	7	48	
28	13	37	556	6	47	
29	14	36	557	5	46	
30	15	35	558	4	45	
31	16	34	559	3	44	
32	17	33	560	2	43	
33	18	32	561	1	42	
34	19	31	562	0	41	
35	20	30	563	9	40	
36	21	29	564	8	39	
37	22	28	565	7	38	
38	23	27	566	6	37	
39	24	26	567	5	36	
40	25	25	568	4	35	
41	26	24	569	3	34	
42	27	23	570	2	33	
43	28	22	571	1	32	
44	29	21	572	0	31	
45	30	20	573	9	30	
46	31	19	574	8	29	
47	32	18	575	7	28	
48	33	17	576	6	27	
49	34	16	577	5	26	
50	35	15	578	4	25	
51	36	14	579	3	24	
52	37	13	580	2	23	
53	38	12	581	1	22	
54	39	11	582	0	21	
55	40	10	583	9	20	
56	41	9	584	8	19	
57	42	8	585	7	18	
58	43	7	586	6	17	
59	44	6	587	5	16	
60	45	5	588	4	15	
61	46	4	589	3	14	
62	47	3	590	2	13	
63	48	2	591	1	12	
64	49	1	592	0	11	
65	50	0	593	9	10	
66	51	9	594	8	9	
67	52	8	595	7	8	
68	53	7	596	6	7	
69	54	6	597	5	6	
70	55	5	598	4	5	
71	56	4	599	3	4	
72	57	3	600	2	3	
73	58	2	601	1	2	
74	59	1	602	0	1	
75	60	0	603	9	0	
76	61	9	604	8	9	
77	62	8	605	7	8	
78	63	7	606	6	7	
79	64	6	607	5	6	
80	65	5	608	4	5	
81	66	4	609	3	4	
82	67	3	610	2	3	
83	68	2	611	1	2	
84	69	1	612	0	1	
85	70	0	613	9	0	
86	71	9	614	8	9	
87	72	8	615	7	8	
88	73	7	616	6	7	
89	74	6	617	5	6	
90	75	5	618	4	5	
91	76	4	619	3	4	
92	77	3	620	2	3	
93	78	2	621	1	2	
94	79	1	622	0	1	
95	80	0	623	9	0	
96	81	9	624	8	9	
97	82	8	625	7	8	
98	83	7	626	6	7	
99	84	6	627	5	6	
100	85	5	628	4	5	

TABLE 22.—(Geodetic position computations—Continued.

LATITUDE 52°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10' = -2.3
0						
52 00	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767
1	15	8.509 9311	074	98	30	
2	11	8.509 9298	100	97	34	
3	07	86	126	97	39	
4	8.508 8103	73	151	96	43	
05	8.508 8099	61	177	96	47	
6	95	48	203	95	52	
7	90	36	229	94	56	
8	86	23	255	94	60	
9	82	8.509 9211	281	93	65	
10	8.508 8078	8.509 9198	1.51307	2.3792	6.3869	
11	74	86	333	92	73	
12	70	73	359	91	78	
13	65	61	385	91	82	
14	61	48	411	90	86	
15	57	36	436	89	91	
16	53	23	462	88	95	
17	49	8.509 9111	488	88	6.3899	
18	45	8.509 9099	514	87	6.3904	
19	41	86	540	87	08	
20	8.508 8036	8.509 9074	1.51566	2.3786	6.3912	7.763
21	32	61	592	85	17	
22	28	49	618	85	21	
23	24	36	644	84	25	
24	20	24	670	83	30	
25	16	8.509 9011	696	83	34	
26	11	8.509 8999	722	82	38	
27	07	86	748	81	43	
28	8.508 8003	74	774	81	47	
29	8.508 7999	62	800	80	51	
30	8.508 7995	8.509 8949	1.51826	2.3779	6.3956	
31	91	37	852	79	60	
32	87	24	878	78	65	
33	82	8.509 8912	904	78	69	
34	78	8.509 8899	930	77	73	
35	74	87	956	76	78	
36	70	74	1.51982	75	82	
37	66	62	1.52008	75	86	
38	62	50	034	74	91	
39	58	37	060	73	6.3995	
40	8.508 7953	8.509 8825	1.52086	2.3773	6.4000	7.758
41	49	12	112	72	04	
42	45	8.509 8800	138	71	08	
43	41	8.509 8788	164	71	13	
44	37	75	190	70	17	
45	33	63	216	69	21	
46	29	50	242	68	26	
47	24	38	268	68	30	
48	20	25	294	67	35	
49	16	13	320	66	39	
50	8.508 7912	8.509 8701	1.52347	2.3766	7.4043	
51	08	8.509 8688	373	65	48	
52	04	76	399	64	52	
53	8.508 7900	63	425	64	57	
54	8.508 7895	51	451	63	61	
55	91	39	477	62	65	
56	87	26	503	61	70	
57	83	14	529	61	74	
58	79	8.509 8602	555	60	79	
59	75	8.509 8589	581	59	83	
60	8.508 7871	8.509 8577	1.52608	2.3759	6.4088	7.753



TABLE 22.—Geodetic position computations—Continued.

LATITUDE 43°.

Lat	log A		log B		log C		log D		log E		log F	
	diff. 1" = -0.07		diff. 1" = -0.21		diff. 1" = +0.42		diff. 1" = +0.00		diff. 1" = +0.06		diff. 10' = -1.0	
43 00	A. 509 0419		B. 510 6220		1. 37386		2. 3914		G. 1684		7. 854	
1	14		B. 510 6307		412		15		89			
2	10		B. 510 6196		437		15		92			
3	08			92	462		15		95			
4	B. 509 0401			00	487		15		G. 1699			
05	A. 509 0397			58	512		15		H. 1708			
6	03			49	537		16		06			
7	89			30	563		16		10			
8	84			17	588		16		14			
9	80		B. 510 6105		613		16		17			
10	A. 509 0376		B. 510 6092		1. 37638		2. 3916		G. 1721			
11	71			79	638		16		25			
12	67			66	663		17		29			
13	63			53	688		17		32			
14	59			40	713		17		36			
15				28	738		17					
16	54			15	764		17		39			
17	50				789		17		43			
18	46		B. 510 6002		814		17		47			
19	41		B. 510 5989		839		18		50			
	37			76	864		18		54			
20	A. 509 0353		B. 510 5976		1. 37889		2. 3918		G. 1758		7. 862	
21	29			50	915		18		51			
22	24			38	940		18		55			
23	20			25	965		18		59			
24	16		B. 510 5912		1. 37990		18		72			
25												
26	12		B. 510 5890		1. 38015		19		76			
27	07			88	040		19		80			
28	A. 509 0303			73	065		19		83			
29	A. 509 0299			60	091		19		87			
	94			48	116		19		91			
30	A. 509 0280		B. 510 5835		1. 38141		2. 3919		G. 1796			
31	86			22	166		20		G. 1798			
32	82		B. 510 5809		191		20		G. 1802			
33	77		B. 510 5796		216		20		06			
34	73			83	241		20		09			
35				71	266		20		13			
36	69			58	292		20		17			
37	66			45	317		20		20			
38	62			32	342		20		24			
39	58			19	367		21		28			
40	A. 509 0247		B. 510 5706		1. 38372		2. 3921		G. 1831		7. 860	
41	43		B. 510 5693		417		21		35			
42	39			81	442		21		39			
43	34			68	467		21		42			
44	30			56	492		21		46			
45				42	518		21		50			
46	26			29	543		21		53			
47	17			16	568		22		57			
48	13		B. 510 5603		593		22		61			
49	09		B. 510 5591		618		22		65			
50	A. 509 0204		B. 510 5578		1. 38643		2. 3922		G. 1868			
51	A. 509 0200			05	643		22		72			
52	A. 509 0196			52	668		22		76			
53	92			39	693		22		79			
54	87			26	719		22		83			
55					744		22					
56	83			13	769		22		87			
57	79		B. 510 5501		794		23		91			
58	74		B. 510 5488		819		23		94			
59	70			75	844		23		G. 1898			
	66			62	869		23		G. 1902			
60	A. 509 0102		B. 510 5449		1. 38994		2. 3923		G. 1905		7. 868	

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 44°.

Lat.		log A diff. 1" = -0.07	log B. diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = +0.00	log E diff. 1" = +0.06	log F diff. 10' = 1.2
°	'						
44	00	8.509 0162	8.510 5449	1.38894	2.3923	6.1905	7.848
	1	57	36	919	23	09	
	2	53	23	945	23	13	
	3	49	8.510 5411	970	23	17	
	4	44	8.510 5398	1.38995	23	20	
	05	40	85	1.39020	23	24	
	6	36	72	045	24	28	
	7	31	59	070	24	31	
	8	27	46	095	24	35	
	9	23	33	120	24	39	
	10	8.509 0119	8.510 5320	1.39145	2.3924	6.1943	
	11	14	8.510 5307	171	24	46	
	12	10	8.510 5295	196	24	50	
	13	06	82	221	24	54	
	14	8.509 0102	69	246	24	58	
	15	8.509 0097	56	271	24	61	
	16	93	43	296	24	65	
	17	89	30	321	24	69	
	18	84	18	346	24	72	
	19	80	8.510 5205	371	25	76	
	20	8.509 0076	8.510 5192	1.39396	2.3925	6.1980	7.845
	21	72	79	422	25	84	
	22	67	66	447	25	87	
	23	63	53	472	25	91	
	24	59	40	497	25	95	
	25	54	28	522	25	6.1999	
	26	50	15	547	25	6.2002	
	27	46	8.510 5102	572	25	06	
	28	42	8.510 5089	597	25	10	
	29	37	76	623	25	14	
	30	8.509 0033	8.510 5063	1.39648	2.3925	6.2017	
	31	29	50	673	25	21	
	32	24	37	698	25	25	
	33	20	25	723	25	29	
	34	16	8.510 5012	748	25	32	
	35	11	8.510 4999	773	25	36	
	36	07	86	798	26	40	
	37	8.509 0003	73	823	26	44	
	38	8.508 9999	60	848	26	47	
	39	94	47	873	26	51	
	40	8.508 9990	8.510 4935	1.39898	2.3926	6.2055	7.843
	41	86	22	924	26	59	
	42	81	8.510 4909	949	26	62	
	43	77	8.510 4896	974	26	66	
	44	73	83	1.39999	26	70	
	45	69	70	1.40024	26	74	
	46	64	57	049	26	77	
	47	60	44	074	26	81	
	48	56	32	099	26	85	
	49	51	19	124	26	89	
	50	8.508 9947	8.510 4806	1.40149	2.3926	6.2092	
	51	43	8.510 4793	174	26	6.2096	
	52	39	80	200	26	6.2100	
	53	34	67	225	26	04	
	54	30	54	250	26	08	
	55	26	41	275	26	11	
	56	21	29	300	26	15	
	57	17	16	325	26	19	
	58	13	8.510 4703	350	26	23	
	59	09	8.510 4690	375	26	27	
	60	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 45°.

Lat.	D	log A	log B	log C	log D	log E	log F
		diff. 1" = -0.07	diff. 1" = -0.21	diff. 1" = +0.42	diff. 1" = ±0.00	diff. 1" = +0.06	diff. 10' = -1.3
45	00	8.508 9904	8.510 4677	1.40400	2.3926	6.2130	7.840
	1	8.508 9900	64	435	26	34	
	2	8.508 9896	51	480	26	33	
	3	81	39	478	26	42	
	4	87	26	501	26	46	
	05	83	18	526	26	49	
	6	76	8.510 4600	551	26	53	
	7	74	8.510 4587	578	26	57	
	8	70	74	601	26	61	
	9	66	61	626	26	64	
	10	8.508 9861	8.510 4548	1.40651	2.3936	6.2168	
	11	57	36	676	26	72	
	12	58	23	701	26	76	
	13	48	8.510 4519	737	26	80	
	14	44	8.510 4497	752	26	83	
	15	40	84	777	26	87	
	16	36	71	802	26	91	
	17	31	59	827	26	95	
	18	27	46	852	26	6.2199	
	19	23	33	877	26	6.2202	
	20	8.508 9818	8.510 4420	1.40902	2.3926	6.2206	7.848
	21	14	8.510 4407	927	26	10	
	22	10	8.510 4394	952	26	14	
	23	06	81	1.40978	26	18	
	24	8.508 9801	68	1.41008	26	21	
	25	8.508 9797	56	928	26	25	
	26	98	43	952	26	29	
	27	88	30	978	26	33	
	28	84	17	103	26	37	
	29	80	8.510 4304	128	26	40	
	30	8.508 9776	8.510 4291	1.41168	2.3926	6.2244	
	31	71	78	178	26	48	
	32	67	65	203	26	52	
	33	63	52	229	26	56	
	34	58	40	254	26	60	
	35	54	27	279	26	63	
	36	50	14	304	26	67	
	37	46	8.510 4201	329	26	71	
	38	41	8.510 4188	354	26	75	
	39	37	76	379	26	79	
	40	8.508 9733	8.510 4162	1.41404	2.3926	6.2283	7.855
	41	28	49	429	26	86	
	42	24	37	454	26	90	
	43	20	24	479	26	94	
	44	16	8.510 4111	505	26	6.2298	
	45	11	8.510 4098	530	26	6.2302	
	46	07	86	555	26	06	
	47	8.508 9703	72	580	26	09	
	48	8.508 9698	60	606	26	12	
	49	94	47	630	26	17	
	50	8.508 9689	8.510 4084	1.41655	2.3926	6.2321	
	51	85	21	660	26	25	
	52	81	8.510 4066	706	26	29	
	53	77	8.510 3996	731	26	32	
	54	72	82	756	24	36	
	55	68	69	781	24	40	
	56	64	57	806	24	44	
	57	60	44	831	24	48	
	58	56	31	856	24	52	
	59	51	18	881	24	55	
	60	8.508 9647	8.510 3906	1.41906	2.3924	6.2359	7.862

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 46°.

Lat.		log A diff. 1"=−0.07	log B diff. 1"=−0.21	log C diff. 1"=+0.42	log D diff. 1"=−0.00	log E diff. 1"=+0.06	log F diff. 10"=−1.4
°	'						
46	00	8.508 9647	8.510 8906	1.41906	2.3924	6.2859	7.832
	1	43	8.510 8892	981	24	63	
	2	38	79	957	24	67	
	3	34	67	1.41982	24	71	
	4	30	54	1.42007	24	75	
	05	25	41	082	24	79	
	6	21	28	057	23	82	
	7	17	15	082	23	86	
	8	13	8.510 8802	107	23	90	
	9	08	8.510 8789	182	23	94	
	10	8.508 9604	8.510 8776	1.42157	2.3923	6.2898	
	11	8.508 9600	64	183	23	6.2402	
	12	8.508 9595	51	208	23	06	
	13	91	38	233	23	09	
	14	87	25	258	23	13	
	15	83	8.510 8712	283	23	17	
	16	78	8.510 8699	308	23	21	
	17	74	86	333	22	25	
	18	70	74	358	22	29	
	19	65	61	384	22	33	
	20	8.508 9561	8.510 8648	1.42409	2.3922	6.2436	7.830
	21	57	35	434	22	40	
	22	53	22	459	22	44	
	23	48	8.510 8609	484	22	48	
	24	44	8.510 8596	509	22	52	
	25	40	84	534	22	56	
	26	35	71	559	21	60	
	27	31	58	584	21	64	
	28	27	45	610	21	67	
	29	23	32	635	21	71	
	30	8.508 9518	8.510 8519	1.42660	2.3921	6.2475	
	31	14	8.510 8506	685	21	79	
	32	10	8.510 8494	710	21	83	
	33	05	81	735	21	87	
	34	8.508 9501	68	760	20	91	
	35	8.508 9497	55	786	20	95	
	36	98	42	811	20	6.2499	
	37	88	29	836	20	6.2502	
	38	84	17	861	20	06	
	39	80	8.510 8404	886	20	10	
	40	8.508 9475	8.510 8391	1.42911	2.3920	6.2514	7.827
	41	71	78	936	19	18	
	42	67	65	961	19	22	
	43	63	52	1.42987	19	26	
	44	58	39	1.43012	19	30	
	45	54	27	037	19	34	
	46	50	14	062	19	38	
	47	45	8.510 8301	087	19	41	
	48	41	8.510 8288	112	18	45	
	49	37	75	137	18	49	
	50	8.508 9433	8.510 8262	1.43163	2.3918	6.2553	
	51	28	49	188	18	57	
	52	24	37	213	18	61	
	53	20	24	238	18	65	
	54	16	8.510 8211	263	18	69	
	55	11	8.510 8198	288	17	73	
	56	07	85	314	17	77	
	57	8.508 9403	72	339	17	81	
	58	8.508 9398	60	364	17	84	
	59	94	47	389	17	88	
	60	8.508 9390	8.510 8134	1.43414	2.3917	6.2592	7.824

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 47°.

Lat.	log A dist. 1° = -0.07	log B dist. 1° = -0.21	log C dist. 1° = +0.42	log D dist. 1° = -0.00	log E dist. 1° = +0.07	log F dist. 1° = -1.6
47 00	8.508 9880	8.510 3134	1.43414	2.3017	6.2582	7.824
1	88	21	438	18	6.2586	
2	81	8.510 3108	435	18	6.2590	
3	77	8.510 3084	430	16	64	
4	73	82	515	16	65	
05	68	70	540	16	12	
6	64	57	565	16	16	
7	60	44	590	15	20	
8	56	31	615	15	24	
9	51	18	641	15	28	
10	8.508 9847	8.510 3006	1.43808	2.3015	6.2622	
11	43	8.510 2998	801	15	26	
12	38	80	716	14	30	
13	34	67	741	14	34	
14	30	54	765	14	37	
15	26	41	788	14	51	
16	21	28	817	14	55	
17	17	16	842	13	59	
18	13	8.510 2903	867	13	63	
19	08	8.510 2900	892	13	67	
20	8.508 9804	8.510 2877	1.43817	2.3013	6.2671	7.821
21	8.508 9800	64	943	13	75	
22	8.508 9296	51	968	12	79	
23	91	39	1.43809	12	83	
24	87	26	1.43815	12	87	
25	83	13	043	12	91	
26	79	8.510 2800	069	12	95	
27	74	8.510 2787	094	11	6.2689	
28	70	74	119	11	6.2708	
29	66	62	144	11	66	
30	8.508 9261	8.510 2749	1.44169	2.3011	6.2710	
31	57	38	196	11	14	
32	53	23	220	10	18	
33	49	8.510 2710	245	10	22	
34	44	8.510 2698	270	10	26	
35	40	86	295	10	30	
36	36	72	321	10	34	
37	32	59	346	09	38	
38	27	46	371	09	42	
39	23	33	396	09	46	
40	8.508 9219	8.510 2621	1.44421	2.3009	6.2750	7.817
41	14	8.510 2608	447	08	54	
42	10	8.510 2595	472	08	58	
43	06	82	497	08	62	
44	8.508 9202	69	522	08	66	
45	8.508 9197	57	547	07	70	
46	93	44	573	07	74	
47	89	31	598	07	78	
48	84	18	623	07	82	
49	80	8.510 2505	648	07	86	
50	8.508 9176	8.510 2493	1.44673	2.3006	6.2790	
51	72	40	699	06	94	
52	67	67	724	06	6.2798	
53	63	64	749	06	6.2802	
54	59	41	774	06	06	
55	55	28	800	05	10	
56	50	16	825	05	14	
57	46	8.510 2403	850	05	18	
58	42	8.510 2390	875	04	22	
59	38	77	900	04	26	
60	8.508 9153	8.510 2364	1.44926	2.3004	6.2830	7.814

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 48°.

Lat.		log A diff. 1'' = -0.07	log B diff. 1'' = -0.21	log C diff. 1'' = +0.42	log D diff. 1'' = -0.00	log E diff. 1'' = +0.07	log F diff. 10'' = -1.7
°	'						
48	00	8.508 9133	8.510 2364	1.44926	2.3904	6.2830	7.814
	1	29	52	951	04	34	
	2	25	39	1.44976	03	38	
	3	20	26	1.45001	03	42	
	4	16	13	027	03	46	
	05	12	8.510 2300	052	02	50	
	6	08	8.510 2288	077	02	54	
	7	8.508 9103	75	102	02	58	
	8	8.508 9099	62	128	02	62	
	9	95	49	153	01	66	
	10	8.508 9091	8.510 2236	1.45178	2.3901	6.2870	
	11	86	24	203	01	74	
	12	82	8.510 2211	229	01	78	
	13	78	8.510 2198	254	00	82	
	14	74	85	279	00	86	
	15	69	72	304	2.3900	90	
	16	65	60	330	2.3899	94	
	17	61	47	355	99	6.2898	
	18	57	34	380	99	6.2902	
	19	52	21	406	99	06	
	20	8.508 9048	8.510 2108	1.45431	2.3898	6.2910	7.811
	21	44	8.510 2096	456	98	14	
	22	39	83	481	98	18	
	23	35	70	507	97	22	
	24	31	57	532	97	26	
	25	27	45	557	97	30	
	26	22	32	582	97	34	
	27	18	19	608	96	38	
	28	14	8.510 2006	633	96	42	
	29	10	8.510 1993	658	96	46	
	30	8.508 9005	8.510 1981	1.45683	2.3895	6.2950	
	31	8.508 9001	68	709	95	54	
	32	8.508 8997	55	734	95	58	
	33	93	42	759	95	62	
	34	88	30	785	94	66	
	35	84	17	810	94	70	
	36	80	8.510 1904	835	94	74	
	37	76	8.510 1891	861	93	78	
	38	71	78	886	93	82	
	39	67	66	911	93	86	
	40	8.508 8963	8.510 1853	1.45937	2.3892	6.2990	7.807
	41	59	40	962	92	94	
	42	54	27	1.45987	92	6.2998	
	43	50	15	1.46012	91	6.3002	
	44	46	8.510 1802	038	91	06	
	45	41	8.510 1789	063	91	10	
	46	37	76	088	90	15	
	47	33	64	114	90	19	
	48	29	51	139	90	23	
	49	24	38	164	89	27	
	50	8.508 8920	8.510 1725	1.46190	2.3889	6.3031	
	51	16	13	215	89	35	
	52	12	8.510 1700	240	88	39	
	53	08	8.510 1687	266	88	43	
	54	8.508 8903	74	291	88	47	
	55	8.508 8899	62	316	87	51	
	56	95	49	342	87	55	
	57	90	36	367	87	59	
	58	86	23	392	86	63	
	59	82	8.510 1610	418	86	67	
	60	8.508 8878	8.510 1598	1.46443	2.3886	6.3071	7.804

**TABLE 22.—Geodetic position computations—Continued.**

LATITUDE 40°.

Lat.	log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.42	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 1" = -1.9
43 00	2.506 8878	8.510 1806	1.48443	2.3886	6.3871	7.804
1	78	86	483	86	78	
2	08	72	484	86	79	
3	65	89	513	86	84	
4	61	47	544	84	88	
05	87	34	579	84	92	
6	62	21	608	84	6.3896	
7	48	8.510 1809	621	83	6.3100	
8	44	8.510 1808	646	83	04	
9	89	83	671	83	06	
10	8.508 8885	8.510 1470	1.48889	2.3882	6.3112	
11	31	58	723	82	16	
12	27	45	747	81	20	
13	28	32	773	81	24	
14	18	19	796	81	28	
15	14	8.510 1407	824	80	32	
16	10	8.510 1394	849	80	37	
17	06	61	874	80	41	
18	8.508 8881	65	899	80	46	
19	8.508 8797	56	925	79	49	
20	8.508 8798	8.510 1343	1.48860	2.3878	6.3128	7.800
21	89	30	1.48878	78	57	
22	64	17	1.47001	78	61	
23	80	8.510 1306	928	77	65	
24	76	8.510 1292	952	77	69	
25	72	79	977	77	73	
26	67	67	106	76	76	
27	68	54	129	76	80	
28	60	41	168	75	86	
29	56	26	179	75	90	
30	8.508 8750	8.510 1216	1.47204	2.3875	6.3194	
31	46	8.510 1203	230	74	6.3198	
32	42	8.510 1190	256	74	6.3202	
33	38	78	281	73	06	
34	38	65	306	73	10	
35	29	52	331	73	15	
36	25	39	357	72	19	
37	21	27	382	72	23	
38	16	14	408	71	27	
39	12	8.510 1101	433	71	31	
40	8.508 8708	8.510 1088	1.47459	2.3871	6.3235	7.796
41	04	76	484	70	39	
42	8.508 8700	63	509	70	43	
43	8.508 8695	50	535	69	47	
44	91	38	560	69	52	
45	87	25	586	69	56	
46	83	12	611	68	60	
47	78	8.510 1000	637	68	64	
48	74	8.510 0987	662	67	68	
49	70	74	688	67	72	
50	8.508 8666	8.510 0962	1.47713	2.3866	6.3276	
51	61	49	738	66	81	
52	57	36	764	66	85	
53	53	23	789	65	89	
54	49	8.510 0911	815	65	93	
55	45	8.510 0698	840	64	6.3297	
56	40	85	866	64	6.3301	
57	36	73	891	63	06	
58	32	60	917	63	09	
59	28	48	942	63	14	
60	8.508 8623	8.510 0685	1.47968	2.3862	6.3316	7.792

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 50°.

Lat.	log A diff. 1'' = -0.07	log B diff. 1'' = -0.21	log C diff. 1'' = +0.43	log D diff. 1'' = -0.01	log E diff. 1'' = +0.07	log F diff. 10' = -2.0
50 00	8.508 8623	8.510 0835	1.47968	2.3862	6.3318	7.792
1	19	22	1.47993	62	22	
2	15	8.510 0809	1.48019	61	26	
3	11	8.510 0797	044	61	30	
4	06	84	670	60	34	
05	8.508 8602	71	095	60	39	
6	8.508 8598	59	121	60	43	
7	94	46	146	59	47	
8	90	33	172	59	51	
9	85	21	197	58	55	
10	8.508 8581	8.510 0708	1.48223	2.3858	6.3359	
11	77	8.510 0695	248	57	63	
12	73	83	274	57	68	
13	68	70	299	56	72	
14	64	57	325	56	76	
15	60	45	350	55	80	
16	56	32	376	55	84	
17	52	19	401	55	88	
18	47	8.510 0607	427	54	93	
19	43	8.510 0594	452	54	6.3397	
20	8.508 8589	8.510 0581	1.48478	2.3853	6.3401	7.788
21	35	69	504	53	06	
22	30	56	529	52	09	
23	26	43	555	52	14	
24	22	31	580	51	18	
25	18	18	606	51	22	
26	14	8.510 0505	631	50	26	
27	09	8.510 0493	657	50	30	
28	05	80	682	49	34	
29	8.508 8501	67	708	49	39	
30	8.508 8497	8.510 0455	1.48734	2.3848	6.3443	
31	93	42	759	48	47	
32	88	29	785	47	51	
33	84	17	810	47	55	
34	80	8.510 0404	836	46	60	
35	76	8.510 0392	861	46	64	
36	71	79	887	45	68	
37	67	66	913	45	72	
38	63	54	938	44	76	
39	59	41	964	44	81	
40	8.508 8455	8.510 0328	1.48989	2.3843	6.3485	7.784
41	50	16	1.49015	43	89	
42	46	8.510 0303	041	42	93	
43	42	8.510 0291	066	42	6.3497	
44	38	78	092	41	6.3502	
45	34	65	117	41	06	
46	29	53	143	40	10	
47	25	40	169	40	14	
48	21	27	194	39	18	
49	17	15	220	39	23	
50	8.508 8413	8.510 0202	1.49246	2.3838	6.3527	
51	08	8.510 0190	271	38	31	
52	04	77	297	37	35	
53	8.508 8400	64	322	37	40	
54	8.508 8396	52	348	36	44	
55	92	39	374	36	48	
56	87	27	399	35	52	
57	83	14	425	35	56	
58	79	8.510 0101	451	34	61	
59	75	8.510 0089	476	34	65	
60	8.508 8371	8.510 0076	1.49502	2.3833	6.3569	7.780



TABLE 22.—Geodetic position computations—Continued.

LATITUDE 51°.

Lat.		log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10" = -2.2
°	'						
51	00	8.508 8371	8.510 0076	1.49502	2.3833	6.3569	7.780
	1	66	64	528	33	73	
	2	62	51	553	32	78	
	3	58	38	579	32	82	
	4	54	26	605	31	86	
	05	50	13	630	31	90	
	6	45	8.510 0001	656	30	95	
	7	41	8.509 9988	682	29	6.3599	
	8	37	75	707	29	6.3603	
	9	33	63	733	28	07	
	10	8.508 8329	8.509 9950	1.47759	2.3828	6.3612	
	11	24	38	785	27	16	
	12	20	25	810	27	20	
	13	16	13	836	26	24	
	14	12	8.509 9900	862	26	28	
	15	08	8.509 9887	887	25	33	
	16	8.508 8303	75	913	25	37	
	17	8.508 8299	62	939	24	41	
	18	95	50	965	23	45	
	19	91	37	1.49990	23	50	
	20	8.508 8287	8.509 9825	1.50016	2.3822	6.3654	7.776
	21	82	8.509 9812	042	22	58	
	22	78	8.509 9799	067	21	63	
	23	74	87	093	21	67	
	24	70	74	119	20	71	
	25	66	62	145	20	75	
	26	62	49	170	19	80	
	27	57	37	196	18	84	
	28	53	24	222	18	88	
	29	49	8.509 9711	248	17	92	
	30	8.508 8245	8.509 9699	1.50273	2.3817	6.3697	
	31	41	86	299	16	6.3701	
	32	36	74	325	16	05	
	33	32	61	351	15	10	
	34	28	49	376	14	14	
	35	24	36	402	14	18	
	36	20	24	428	13	22	
	37	16	8.509 9611	454	13	27	
	38	11	8.509 9599	480	12	31	
	39	07	86	505	11	35	
	40	8.508 8203	8.509 9574	1.50531	2.3811	6.3740	7.772
	41	8.508 8199	61	557	10	44	
	42	95	48	583	10	48	
	43	90	36	609	09	52	
	44	86	23	634	08	57	
	45	82	8.509 9511	660	08	61	
	46	78	8.509 9498	686	07	65	
	47	74	86	712	07	70	
	48	70	73	738	06	74	
	49	65	61	764	05	78	
	50	8.508 8161	8.509 9448	1.50789	2.3805	6.3782	
	51	57	36	815	04	87	
	52	53	23	841	04	91	
	53	49	8.509 9411	867	03	6.3795	
	54	45	8.509 9398	893	02	6.3800	
	55	40	86	919	02	04	
	56	36	73	944	01	08	
	57	32	61	970	01	13	
	58	28	48	1.50996	2.3800	17	
	59	24	36	1.51022	2.3799	21	
	60	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 52°.

Lat.		log A diff. 1" = -0.07	log B diff. 1" = -0.21	log C diff. 1" = +0.43	log D diff. 1" = -0.01	log E diff. 1" = +0.07	log F diff. 10' = -2.3
52	00	8.508 8120	8.509 9323	1.51048	2.3799	6.3826	7.767
	1	15	8.509 9311	074	98	30	
	2	11	8.509 9298	100	97	34	
	3	07	86	126	97	39	
	4	8.508 8103	73	151	96	43	
	05	8.508 8099	61	177	96	47	
	6	95	48	203	95	52	
	7	90	36	229	94	56	
	8	86	23	255	94	60	
	9	82	8.509 9211	281	93	65	
	10	8.508 8078	8.509 9198	1.51307	2.3792	6.3869	
	11	74	86	333	92	73	
	12	70	73	359	91	78	
	13	65	61	385	91	82	
	14	61	48	411	90	86	
	15	57	36	436	89	91	
	16	53	23	462	88	95	
	17	49	8.509 9111	488	88	6.3899	
	18	45	8.509 9099	514	87	6.3904	
	19	41	86	540	87	08	
	20	8.508 8036	8.509 9074	1.51566	2.3786	6.3912	7.763
	21	32	61	592	85	17	
	22	28	49	618	85	21	
	23	24	36	644	84	25	
	24	20	24	670	83	30	
	25	16	8.509 9011	696	83	34	
	26	11	8.509 8999	722	82	38	
	27	07	86	748	81	43	
	28	8.508 8003	74	774	81	47	
	29	8.508 7999	62	800	80	51	
	30	8.508 7995	8.509 8949	1.51826	2.3779	6.3956	
	31	91	37	852	79	60	
	32	87	24	878	78	65	
	33	82	8.509 8912	904	78	69	
	34	78	8.509 8899	930	77	73	
	35	74	87	956	76	78	
	36	70	74	1.51982	75	82	
	37	66	62	1.52008	75	86	
	38	62	50	034	74	91	
	39	58	37	060	73	6.3995	
	40	8.508 7953	8.509 8825	1.52086	2.3773	6.4000	7.758
	41	49	12	112	72	04	
	42	45	8.509 8800	138	71	08	
	43	41	8.509 8788	164	71	13	
	44	37	75	190	70	17	
	45	33	63	216	69	21	
	46	29	50	242	68	26	
	47	24	38	268	68	30	
	48	20	25	294	67	35	
	49	16	13	320	66	39	
	50	8.508 7912	8.509 8701	1.52347	2.3766	7.4043	
	51	08	8.509 8688	373	65	48	
	52	04	76	399	64	52	
	53	8.508 7900	63	425	64	57	
	54	8.508 7895	51	451	63	61	
	55	91	39	477	62	65	
	56	87	26	503	61	70	
	57	83	14	529	61	74	
	58	79	8.509 8602	555	60	79	
	59	75	8.509 8589	581	59	83	
	60	8.508 7871	8.509 8577	1.52608	2.3759	6.4088	7.753

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 58°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1" = -0.07		diff. 1" = -0.21		diff. 1" = +0.44		diff. 1" = -0.01		diff. 1" = +0.07		diff. 1" = -2.5	
53	00	8.508 7871	8.509 8577		1.52008		2.3769		6.4088		7.738	
	1	67	64		634		58		92			
	2	82	52		660		57		6.4086			
	3	58	40		686		56		6.4101			
	4	54	27		712		56		06			
	05	50	15		738		55		10			
	6	46	8.509 8502		764		54		14			
	7	42	8.509 8490		790		53		18			
	8	38	78		817		53		23			
	9	34	65		843		52		27			
	10	8.508 7829	8.509 8453		1.52069		2.3751		6.4122			
	11	25	41		866		51		30			
	12	21	28		892		50		41			
	13	17	16		917		49		45			
	14	13	8.509 8461		1.52074		48		49			
	15	09	8.509 8391		1.53000		48		54			
	16	05	79		028		47		58			
	17	8.508 7801	87		052		46		63			
	18	8.508 7797	54		078		45		67			
	19	92	42		105		45		72			
	20	8.508 7788	8.509 8329		1.53181		2.3744		6.4176		7.748	
	21	84	17		157		43		80			
	22	80	8.509 8305		183		42		85			
	23	76	8.509 8292		209		42		89			
	24	72	80		235		41		94			
	25	68	68		262		40		6.4198			
	26	64	55		288		39		6.4208			
	27	60	43		314		39		07			
	28	56	31		341		38		12			
	29	51	18		367		37		16			
	30	8.508 7747	8.509 8206		1.53303		2.3736		6.4221			
	31	48	8.509 8194		419		36		25			
	32	39	82		446		35		29			
	33	35	69		472		34		34			
	34	31	57		498		33		38			
	35	27	45		524		33		43			
	36	23	32		551		32		47			
	37	18	20		577		31		52			
	38	14	8.509 8108		603		30		56			
	39	10	8.509 8095		630		29		61			
	40	8.508 7706	8.509 8083		1.53646		2.3729		6.4265		7.743	
	41	8.508 7702	71		662		28		70			
	42	8.508 7698	58		700		27		74			
	43	94	46		735		26		79			
	44	90	34		761		26		83			
	45	86	22		788		25		88			
	46	82	8.509 8009		814		24		92			
	47	77	8.509 7997		840		23		6.4297			
	48	73	85		867		22		6.4301			
	49	69	72		893		22		06			
	50	8.508 7665	8.509 7980		1.53919		2.3721		6.4310			
	51	61	48		916		20		15			
	52	57	36		942		19		19			
	53	53	28		1.54098		18		24			
	54	49	8.509 7911		1.54025		18		28			
	55	45	8.509 7899		061		17		33			
	56	41	87		077		16		37			
	57	37	74		104		15		42			
	58	33	62		130		14		46			
	59	28	50		157		14		51			
	60	8.508 7624	8.509 7888		1.54183		2.3713		6.4355		7.738	

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 54°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1"=-0.07		diff. 1"=-0.20		diff. 1"=+0.44		diff. 1"=-0.01		diff. 1"=+0.08		diff. 10'=-2.6	
54 00	8.508	7624	8.509	7838	1.54183		2.3713		6.4355		7.738	
1		20		25		209		12		60		
2		16		13		236		11		64		
3		12	8.509	7801		262		10		69		
4		08	8.509	7789		288		09		73		
05		04		76		315		09		78		
6	8.508	7600		64		341		08		82		
7	8.508	7596		52		368		07		87		
8		92		40		394		06		91		
9		88		27		421		05	6.4396			
10	8.508	7584	8.509	7716	1.54447		2.3705		6.4400			
11		79	8.509	7703		474		04		05		
12		75	8.509	7691		500		03		09		
13		71		78		527		02		14		
14		67		66		553		01		18		
15		63		54		580		00		23		
16		59		42		606	2.3700			28		
17		55		30		633	2.3699			32		
18		51		17		659		98		37		
19		47	8.509	7605		686		97		41		
20	8.508	7543	8.509	7593	1.54712		2.3696		6.4446		7.733	
21		39		81		739		95		50		
22		35		69		765		94		55		
23		31		56		792		94		59		
24		27		44		818		93		64		
25		22		32		845		92		68		
26		18		20		871		91		73		
27		14	8.509	7508		898		90		78		
28		10	8.509	7495		924		89		82		
29		06		83		951		88		87		
30	8.508	7502	8.509	7471	1.54977		2.3688		6.4491			
31	8.508	7498		59	1.55001			87	6.4496			
32		94		47		031		86	6.4500			
33		90		34		057		85		05		
34		86		22		084		84		09		
35		82	8.509	7410		110		83		14		
36		78	8.509	7398		137		82		19		
37		74		86		163		82		23		
38		70		74		190		81		28		
39		66		61		217		80		32		
40	8.508	7462	8.509	7349	1.55243		2.3679		6.4537		7.728	
41		58		37		270		78		41		
42		53		25		297		77		46		
43		49		13		323		76		51		
44		45	8.509	7301		350		75		55		
45		41	8.509	7289		376		74		60		
46		37		76		403		74		64		
47		33		64		430		73		69		
48		29		52		456		72		74		
49		25		40		483		71		78		
50	8.508	7421	8.509	7228	1.55510		2.3670		6.4583			
51		17		16		526		69		87		
52		13	8.509	7204		563		68		92		
53		09	8.509	7191		590		67	6.4597			
54		05		79		616		66	6.4601			
55	8.508	7401		67		643		66		06		
56	8.508	7397		55		670		65		10		
57		93		43		696		64		15		
58		89		31		723		63		20		
59		85		19		750		62		24		
60	8.508	7381	8.509	7107	1.55777		2.3661		6.4629		7.723	

TABLE 32.—Geodetic position computations—Continued.

LATITUDE 56°.

Lat.	log A		log B		log C		log D		log E		log F	
	dist. 1" = -0.07		dist. 1" = -0.20		dist. 1" = +0.5		dist. 1" = -0.02		dist. 1" = +0.08		dist. 1" = -2.8	
55	00	8.508 7361	8.509 7187		1.55777		2.8061		6.4839		7.728	
	1	77	8.509 7085		808		80		33			
	2	73	82		830		89		35			
	3	69	70		857		36		42			
	4	65	58		884		57		47			
	05	61	46		910		56		52			
	6	56	34		937		56		57			
	7	52	22		964		55		61			
	8	48	8.509 7010	1.55891			54		66			
	9	44	8.509 6908	1.56017			53		70			
	10	8.508 7340	8.509 6806	1.56044	2.8062		6.4835					
	11	36	74	071	51		60					
	12	32	62	098	50		64					
	13	28	49	126	49		69					
	14	24	37	153	48		74					
	15	20	26	178	47		6.4806					
	16	16	13	205	46		6.4703					
	17	12	8.509 6901	232	45		05					
	18	08	8.509 6800	259	44		13					
	19	04	77	286	43		17					
	20	8.508 7300	8.509 6805	1.56012	2.8063		6.4721		7.717			
	21	8.508 7296	53	330	42		20					
	22	92	41	366	41		21					
	23	98	29	402	40		25					
	24	84	17	430	39		29					
	25	80	8.509 6806	447	38		45					
	26	76	8.509 6798	474	37		49					
	27	72	61	500	36		54					
	28	68	49	527	35		59					
	29	64	37	554	34		63					
	30	8.508 7280	8.509 6745	1.56581	2.8058		6.4728					
	31	56	33	608	32		73					
	32	52	21	635	31		77					
	33	48	8.509 6709	662	30		82					
	34	44	8.509 6606	689	29		87					
	35	40	84	716	28		91					
	36	36	72	743	27		6.4790					
	37	32	60	770	26		6.4801					
	38	28	48	797	25		05					
	39	24	36	823	24		10					
	40	8.508 7220	8.509 6624	1.56450	2.8023		6.4815		7.711			
	41	16	12	877	22		20					
	42	12	8.509 6600	904	21		24					
	43	08	8.509 6588	931	20		29					
	44	04	76	958	19		34					
	45	8.508 7200	64	1.56985	15		38					
	46	8.508 7196	52	1.57012	17		43					
	47	92	40	039	16		48					
	48	88	28	066	15		52					
	49	84	16	093	14		57					
	50	8.508 7180	8.509 6606	1.57120	2.813		6.4802					
	51	76	8.509 6493	117	12		60					
	52	72	81	174	11		71					
	53	68	69	201	10		76					
	54	64	57	229	09		81					
	55	60	45	256	08		85					
	56	56	33	283	07		90					
	57	52	21	310	06		6.4806					
	58	48	8.509 6409	337	05		6.4900					
	59	44	8.509 6397	364	04		04					
	60	8.508 7140	8.509 6385	1.57391	2.8005		6.4909		7.706			

TABLE 22.—(Geodetic position computations—Continued.

LATITUDE 56°.

Lat.		log A diff.1''=-0.07	log B diff.1''=-0.20	log C diff.1''=+0.45	log D diff.1''=-0.02	log E diff.1''=+0.08	log F diff.10'=-3.0
°	'						
56	00	8.508 7140	8.509 6385	1.57391	2.3603	6.4909	7.706
	1	36	73	418	02	14	
	2	32	61	445	01	18	
	3	28	49	472	2.3600	23	
	4	24	37	499	2.3599	28	
	05	20	25	526	98	33	
	6	16	13	554	97	37	
	7	12	8.509 6301	581	96	42	
	8	08	8.509 6289	608	95	47	
	9	04	77	635	94	52	
	10	8.508 7100	8.509 6266	1.57662	2.3593	6.4956	
	11	8.508 7096	54	689	92	61	
	12	92	42	717	91	66	
	13	88	30	744	90	71	
	14	84	18	771	89	75	
	15	80	8.509 6206	798	88	80	
	16	76	8.509 6194	825	87	85	
	17	72	82	852	86	90	
	18	69	70	880	85	94	
	19	65	58	907	84	6.4999	
	20	8.508 7061	8.509 6147	1.57934	2.3583	6.5004	7.700
	21	57	35	961	82	09	
	22	53	23	1.57989	81	13	
	23	49	8.509 6111	1.58016	80	18	
	24	45	8.509 6099	043	78	23	
	25	41	87	070	77	28	
	26	37	75	098	76	32	
	27	33	63	125	75	37	
	28	29	51	152	74	42	
	29	25	40	179	73	47	
	30	8.508 7021	8.509 6028	1.58207	2.3572	6.5052	
	31	17	16	234	71	56	
	32	13	8.509 6004	261	70	61	
	33	09	8.509 5992	289	69	66	
	34	05	80	316	68	71	
	35	8.508 7001	68	343	67	75	
	36	8.508 6997	57	371	66	80	
	37	93	45	398	65	85	
	38	89	33	425	64	90	
	39	86	21	453	62	95	
	40	8.508 6982	8.509 5909	1.58480	2.3561	6.5099	7.694
	41	78	8.509 5897	507	00	6.5104	
	42	74	86	535	59	09	
	43	70	74	562	58	14	
	44	66	62	589	57	19	
	45	62	50	617	56	24	
	46	58	38	644	55	28	
	47	54	27	672	54	33	
	48	50	15	699	53	38	
	49	46	8.509 5803	726	52	43	
	50	8.508 6942	8.509 5791	1.58754	2.3550	6.5148	
	51	28	79	781	49	52	
	52	34	67	809	48	57	
	53	30	56	836	47	62	
	54	26	44	864	46	67	
	55	23	32	891	45	72	
	56	19	20	919	44	77	
	57	15	8.509 5709	946	43	81	
	58	11	8.509 5697	1.58974	42	86	
	59	07	85	1.59001	41	91	
	60	8.508 6903	8.509 5673	1.59028	2.3539	6.5196	7.688

TABLE 22 — *Geodetic position computations*—Continued.LATITUDE  $57^{\circ}$ .

Lat.	log A		log B		log C		log D		log E		log F	
	diff. $1'' = -0.00$	diff. $1'' = -0.10$	diff. $1'' = -0.10$	diff. $1'' = -0.10$	diff. $1'' = +0.46$	diff. $1'' = +0.46$	diff. $1'' = -0.02$	diff. $1'' = -0.02$	diff. $1'' = +0.08$	diff. $1'' = +0.08$	diff. $10'' = -3.2$	diff. $10'' = -3.2$
57 00	8.508 6908		8.509 5673		1.59038		2.3480		6.5196		7.668	
1	8.508 6899		81		084		38		6.5201			
2	96		20		083		37		08			
3	91		28		111		36		10			
4	87		26		120		35		15			
05			14		166		34		20			
6	79	8.509 5608			194		33		25			
7	75	8.509 5601			221		32		30			
8	72		79		249		30		35			
9	68		67		276		29		40			
10	6.508 6854	8.509 5598			1.59034		2.3488		6.5244			
11	60		44		281		27		45			
12	56		32		309		26		54			
13	52		20		337		25		60			
14	48	8.509 5600			414		24		64			
15	44	8.509 5607			442		22		69			
16	40		65		469		21		74			
17	36		73		497		20		79			
18	32		82		525		19		85			
19	28		90		552		18		89			
20	7.508 6825	8.509 5436			1.59080		2.3517		6.5288		7.682	
21	21		27		608		18		6.5308			
22	17		16		636		14		6.5308			
23	13	8.509 5408			663		13		08			
24	09	8.509 5402			691		12		13			
25	05		80		718		11		18			
26	8.508 6801		88		746		10		22			
27	8.508 6797		96		774		09		27			
28	83		45		801		07		32			
29	80		33		829		06		37			
30	8.508 6786	8.509 5321			1.59087		2.3505		6.5342			
31	82	8.509 5310			885		04		47			
32	78	8.509 5298			912		03		52			
33	74		88		940		02		57			
34	70		75		968		2.3500		62			
35	66		63		1.59096		2.3499		67			
36	62		51		1.60023		98		72			
37	58		40		051		97		76			
38	54		28		079		96		81			
39	51		16		107		95		86			
40	8.508 6747	8.509 5205			1.60134		2.3498		6.5381		7.675	
41	43	8.509 5193			162		92		6.5386			
42	39		81		190		91		6.5401			
43	35		70		218		90		06			
44	31		58		246		89		11			
45			46		274		87		16			
46	23		35		301		86		21			
47	20		23		329		85		26			
48	16		12		357		84		31			
49	12	8.509 5100			385		83		36			
50	8.508 6708	8.509 5088			1.60413		2.3481		6.5441			
51	04		77		441		80		46			
52	8.508 6700		65		469		79		50			
53	8.508 6696		54		496		78		55			
54	92		42		524		76		60			
55	89		30		552		76		65			
56	85		19		580		74		70			
57	81	8.509 5007			608		73		75			
58	77	8.509 4996			636		72		80			
59	73		84		664		70		85			
60	8.508 6689	8.509 4972			1.60692		2.3469		6.5490		7.689	

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 58°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.47	log D diff. 1" = -0.02	log E diff. 1" = +0.08	log F diff. 10" = -3.3
58	00	8.508 6669	8.509 4972	1.60692	2.3469	6.5490	7.669
	1	65	61	720	68	6.5495	
	2	62	49	748	67	6.5500	
	3	58	38	776	66	05	
	4	54	26	804	64	10	
	05	50	14	832	63	15	
	6	46	8.509 4903	860	62	20	
	7	42	8.509 4891	888	61	25	
	8	38	80	916	59	30	
	9	35	68	944	58	35	
	10	8.508 6631	8.509 4857	1.60972	2.3457	6.5540	
	11	27	45	1.61000	56	45	
	12	23	33	028	54	50	
	13	19	22	056	53	55	
	14	15	8.509 4810	084	52	60	
	15	11	8.509 4799	112	51	65	
	16	08	87	140	49	70	
	17	04	76	168	48	75	
	18	8.508 6600	64	197	47	80	
	19	8.508 6596	53	225	46	85	
	20	8.508 6592	8.509 4741	1.61253	2.3444	6.5590	7.662
	21	88	30	281	43	6.5595	
	22	85	18	309	42	6.5600	
	23	81	8.509 4707	337	41	05	
	24	77	8.509 4695	365	39	10	
	25	73	84	393	38	15	
	26	69	72	422	37	20	
	27	65	61	450	35	25	
	28	62	49	478	34	30	
	29	58	38	506	33	35	
	30	8.508 6554	8.509 4626	1.61534	2.3432	6.5640	
	31	50	15	563	30	45	
	32	46	8.509 4603	591	29	50	
	33	42	8.509 4592	619	28	55	
	34	39	80	647	26	60	
	35	35	69	675	25	65	
	36	31	57	704	24	70	
	37	27	46	732	23	75	
	38	23	35	760	21	80	
	39	20	23	789	20	86	
	40	8.508 6516	8.509 4512	1.61817	2.3419	6.5691	7.656
	41	12	8.509 4500	845	17	6.5696	
	42	08	8.509 4489	873	16	6.5701	
	43	04	77	902	15	06	
	44	8.508 6500	66	930	14	11	
	45	8.508 6497	54	958	12	16	
	46	93	43	1.61987	11	21	
	47	89	32	1.62015	10	26	
	48	85	20	043	08	31	
	49	81	8.509 4409	072	07	36	
	50	8.508 6478	8.509 4397	1.62100	2.3406	6.5741	
	51	74	86	129	04	46	
	52	70	74	157	03	51	
	53	66	63	185	02	56	
	54	62	52	214	2.3400	62	
	55	59	40	242	2.3399	67	
	56	55	29	271	98	72	
	57	51	17	299	96	77	
	58	47	8.509 4306	327	95	82	
	59	43	8.509 4295	356	94	87	
	60	8.508 6440	8.509 4283	1.62384	2.3392	6.5792	7.649



TABLE 22.—Geodetic position computations—Continued.

LATITUDE 50°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.19	log C diff. 1" = +0.48	log D diff. 1" = -0.02	log E diff. 1" = +0.09	log F diff. 10" = -3.5
59	00	8.508 6440	8.509 4283	1.62384	2.3392	6.5792	7.649
	1	36	72	413	91	6.5797	
	2	32	61	441	90	6.5802	
	3	28	49	470	88	07	
	4	24	38	498	87	13	
	5	21	26	527	86	18	
	6	17	15	555	84	23	
	7	13	8.509 4204	584	83	28	
	8	09	8.509 4192	612	82	33	
	9	05	81	641	80	38	
	10	8.508 6402	8.509 4170	1.62399	2.3379	6.5843	
	11	8.508 6398	58	698	78	48	
	12	94	47	727	76	54	
	13	90	36	755	75	59	
	14	87	24	784	74	64	
	15	83	13	812	72	69	
	16	79	8.509 4102	841	71	74	
	17	75	8.509 4090	870	69	79	
	18	71	79	898	68	84	
	19	68	68	927	67	89	
	20	8.508 6364	8.509 4066	1.62955	2.3365	6.5896	7.642
	21	60	45	1.62984	64	6.5900	
	22	56	34	1.63018	63	05	
	23	52	22	041	61	10	
	24	49	11	070	60	15	
	25	45	8.509 4000	099	58	20	
	26	41	8.509 3989	127	57	25	
	27	38	77	156	56	31	
	28	34	66	185	54	36	
	29	30	55	214	53	41	
	30	8.508 6326	8.509 3943	1.63242	2.3351	6.5946	
	31	23	32	271	50	51	
	32	19	21	300	49	57	
	33	15	8.509 3910	329	47	62	
	34	11	8.509 3898	357	46	67	
	35	08	87	386	44	72	
	36	04	76	415	43	77	
	37	8.508 6300	65	444	42	82	
	38	8.508 6296	53	473	40	88	
	39	93	42	501	39	93	
	40	8.508 6289	8.509 3831	1.63530	2.3337	6.5998	7.635
	41	85	20	559	36	6.6003	
	42	81	8.509 3808	588	35	08	
	43	78	8.509 3797	617	33	14	
	44	74	86	646	32	19	
	45	70	75	674	30	24	
	46	66	63	703	29	29	
	47	63	52	732	28	34	
	48	59	41	761	26	40	
	49	55	30	790	25	45	
	50	8.508 6251	8.509 3719	1.63819	2.3323	6.6050	
	51	48	8.509 3708	848	22	55	
	52	44	8.509 3696	877	20	61	
	53	40	85	906	19	66	
	54	36	74	935	17	71	
	55	33	63	964	16	76	
	56	29	52	1.63993	15	81	
	57	25	40	1.64022	13	87	
	58	22	29	051	12	92	
	59	18	18	080	10	6.6097	
	60	8.508 6214	8.509 3607	1.64109	2.3309	6.6102	7.627

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 60°.

Lat.		log A diff. 1"=-0.06	log B diff. 1"=-0.12	log C diff. 1"=+0.49	log D diff. 1"=-0.03	log E diff. 1"=+0.09	log F diff. 10"=-3.7
°	'						
60	00	8.508 6214	8.509 3607	1.64109	2.3309	6.6102	7.627
	1	10	8.509 3596	138	07	08	
	2	07	85	167	06	13	
	3	8.508 6203	78	196	04	18	
	4	8.508 6199	62	225	03	23	
	05	96	51	254	02	29	
	6	92	40	283	2.3300	34	
	7	88	29	312	2.3299	39	
	8	84	18	341	97	44	
	9	81	8.509 3507	370	96	50	
	10	8.508 6177	8.509 3495	1.64400	2.3294	6.6155	
	11	73	84	429	93	60	
	12	70	73	458	91	66	
	13	66	62	487	90	71	
	14	62	51	516	88	76	
	15	58	40	545	87	81	
	16	55	29	574	85	87	
	17	51	18	604	84	92	
	18	47	8.509 3407	633	82	6.6197	
	19	44	8.509 3395	662	81	6.6203	
	20	8.508 6140	8.509 3384	1.64691	2.3279	6.6208	7.620
	21	36	73	720	78	13	
	22	33	62	750	76	18	
	23	29	51	779	75	24	
	24	25	40	808	73	29	
	25	21	29	838	72	34	
	26	18	18	867	70	40	
	27	14	8.509 3307	896	69	45	
	28	10	8.509 3296	925	67	50	
	29	07	85	955	66	56	
	30	8.508 6103	8.509 3274	1.64984	2.3264	6.6261	
	31	8.508 6099	63	1.65013	63	66	
	32	96	52	043	61	72	
	33	92	40	072	60	77	
	34	88	29	101	58	82	
	35	85	18	131	57	87	
	36	81	8.509 3207	160	55	93	
	37	77	8.509 3196	190	54	6.6298	
	38	74	85	219	52	6.6304	
	39	70	74	248	51	09	
	40	8.508 6066	8.509 3163	1.65278	2.3249	6.6314	7.613
	41	63	52	307	48	20	
	42	59	41	337	46	25	
	43	55	30	366	45	30	
	44	52	19	396	43	36	
	45	48	8.509 3108	425	41	41	
	46	44	8.509 3097	455	40	46	
	47	41	86	484	38	52	
	48	37	75	514	37	57	
	49	33	64	543	35	62	
	50	8.508 6030	8.509 3053	1.65573	2.3234	6.6368	
	51	26	42	602	32	73	
	52	22	31	632	31	79	
	53	19	20	661	29	84	
	54	15	8.509 3010	691	28	89	
	55	11	8.509 2999	721	26	6.6395	
	56	08	88	750	24	6.6400	
	57	04	77	780	23	06	
	58	8.508 6000	66	809	21	11	
	59	8.508 5997	55	839	20	16	
	60	8.508 5993	8.509 2944	1.65869	2.3218	6.6422	7.605

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 61°.

Lat.	log A		log B		log C		log D		log E		log F	
	diff. 1° = -0.08	diff. 1° = -0.18	diff. 1° = +0.80	diff. 1° = -0.08	diff. 1° = +0.80	diff. 1° = -0.08	diff. 1° = +0.80	diff. 1° = -0.08	diff. 1° = +0.80	diff. 1° = -0.08	diff. 1° = +0.80	diff. 1° = -0.08
61 00	8.508 5400	8.509 2944	1.65800	2.3218	6.6422	7.685						
1	89	83	805	17	27							
2	88	82	800	15	26							
3	87	81	795	13	25							
4	79	8.509 2900	1.65807	12	23							
65	75	8.509 2859	1.65817	10	21							
6	71	78	847	08	14							
7	68	87	076	07	13							
8	64	86	168	05	12							
9	60	46	125	04	10							
10	8.508 5407	8.509 2855	1.65825	2.3202	6.6429							
11	56	94	196	2.3201	21							
12	49	13	235	2.3199	19							
13	46	8.509 2802	255	96	17							
14	42	8.509 2791	285	95	16							
15	39	80	315	94	15							
16	35	89	344	92	14							
17	31	88	374	91	13							
18	28	87	404	89	12							
19	24	87	434	88	11							
20	8.508 5420	8.509 2725	1.65854	2.3186	6.6520	7.687						
21	17	16	464	86	10							
22	13	8.509 2704	504	85	9							
23	10	8.509 2692	556	84	8							
24	06	83	608	80	7							
25	8.508 5402	72	613	78	6							
26	8.508 5399	61	643	77	5							
27	96	50	673	76	4							
28	92	39	703	75	3							
29	88	28	733	72	2							
30	8.508 5404	8.509 2618	1.65768	2.3170	6.6585							
31	81	8.509 2607	793	68	1							
32	77	8.509 2596	823	67	0							
33	74	86	853	65	0							
34	70	74	883	64	0							
35	66	64	913	62	12							
36	63	53	943	60	11							
37	59	42	1.66973	58	10							
38	56	31	1.67003	57	9							
39	52	20	683	56	8							
40	8.508 5408	8.509 2510	1.67003	2.3154	6.6640	7.689						
41	45	8.509 2499	994	52	45							
42	41	88	124	50	44							
43	38	77	154	49	43							
44	34	67	184	47	42							
45	30	56	214	45	41							
46	27	45	244	44	40							
47	23	34	274	42	39							
48	20	24	305	40	38							
49	16	13	335	39	37							
50	8.508 5413	8.509 2402	1.67365	2.3137	6.6685							
51	09	8.509 2391	396	35	6.6700							
52	06	83	426	34	06							
53	8.508 5402	70	456	32	12							
54	8.508 5798	59	486	30	17							
55	96	49	516	29	23							
56	91	38	547	27	28							
57	88	27	577	25	34							
58	84	16	607	23	39							
59	80	8.509 2306	637	22	45							
60	8.508 5777	8.509 2295	1.67668	2.3120	6.6750	7.691						

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 62°.

Lat.		log A diff. 1" = -0.06	log B diff. 1" = -0.18	log C diff. 1" = +0.51	log D diff. 1" = -0.08	log E diff. 1" = +0.09	log F diff. 10' = -4.2
°	'						
62	00	8.508 5777	8.509 2295	1.67668	2.3120	6.6750	7.581
	1	73	84	698	18	56	
	2	70	74	728	17	61	
	3	66	63	759	15	67	
	4	63	52	789	13	73	
	05	59	42	820	12	78	
	6	55	31	850	10	84	
	7	52	20	880	08	89	
	8	48	8.509 2210	911	06	6.6795	
	9	45	8.509 2199	941	05	6.6801	
	10	8.508 5741	8.509 2188	1.67972	2.3103	6.6806	
	11	38	78	1.68002	01	12	
	12	34	67	083	2.3100	17	
	13	30	56	063	2.3098	23	
	14	27	46	094	96	29	
	15	24	35	124	94	34	
	16	20	25	155	93	40	
	17	16	14	185	91	45	
	18	13	8.509 2103	216	89	51	
	19	09	8.509 2093	246	87	57	
	20	8.508 5706	8.509 2082	1.68277	2.3086	6.6862	7.573
	21	8.508 5702	71	307	84	68	
	22	8.508 5699	61	338	82	73	
	23	95	50	369	80	79	
	24	92	40	399	79	85	
	25	88	29	430	77	90	
	26	85	19	461	75	6.6896	
	27	81	8.509 2008	491	74	6.6902	
	28	78	8.509 1997	522	72	07	
	29	74	87	553	70	13	
	30	8.508 5671	8.509 1976	1.68583	2.3068	6.6919	
	31	67	66	614	66	24	
	32	64	55	645	65	30	
	33	60	45	675	63	36	
	34	56	34	706	61	41	
	35	53	23	737	59	47	
	36	49	13	768	58	53	
	37	46	8.509 1902	799	56	58	
	38	42	8.509 1892	829	54	64	
	39	39	81	860	52	70	
	40	8.508 5635	8.509 1871	1.68891	2.3050	6.6975	7.564
	41	32	60	922	49	81	
	42	28	50	953	47	87	
	43	25	39	1.68984	45	92	
	44	21	29	1.69014	43	6.6998	
	45	18	18	045	42	6.7004	
	46	14	8.509 1808	076	40	09	
	47	11	8.509 1797	107	38	15	
	48	07	87	138	36	21	
	49	04	76	169	34	26	
	50	8.508 5600	8.509 1766	1.69200	2.3033	6.7032	
	51	8.508 5597	55	231	31	38	
	52	93	45	262	29	44	
	53	90	34	293	27	49	
	54	86	24	324	25	55	
	55	83	14	355	23	61	
	56	80	8.509 1703	386	22	67	
	57	76	8.509 1693	417	20	72	
	58	73	82	448	18	78	
	59	69	72	479	16	84	
	60	8.508 5566	8.509 1661	1.69510	2.3014	6.7089	7.556

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 69°.

Lat.	log A diff. 1" = -0.06	log B diff. 1" = -0.17	log C diff. 1" = +0.52	log D diff. 1" = -0.06	log E diff. 1" = +0.10	log F diff. 1" = -4.5
68 00	8.508 5206	8.509 1441	1.03530	2.3084	6.7209	7.546
01	62	42	541	13	6.7206	
02	59	40	573	11	6.7201	
03	55	36	608	09	6.7197	
04	52	30	646	07	6.7192	
05	48	2,509 1409	684	05	6.7188	
06	45	8.509 1389	697	03	6.7184	
07	41	86	735	02	6.7180	
08	38	78	780	2,3000	6.7176	
09	34	66	791	2.2998	6.7172	
10	8.508 5281	8.509 1467	1.03622	2.3006	6.7167	
11	27	47	808	04	6.7163	
12	24	36	854	02	6.7159	
13	20	28	913	00	6.7155	
14	17	18	947	99	6.7151	
15	14	8.509 1505		97	6.7147	
16	10	8.509 1486	1.70009	95	6.7143	
17	07	86	041	93	6.7139	
18	03	74	073	91	6.7135	
19	8.508 5300	64	108	79	6.7130	
20	8.508 5426	8.509 1454	1.70126	2.2977	6.7205	7.547
21	93	81	166	75	6.7201	
22	89	68	197	74	6.7197	
23	86	58	229	72	6.7193	
24	83	47	266	70	6.7189	
25	79	8.509 1402	302	68	6.7185	
26	76	8.509 1382	333	66	6.7181	
27	72	81	376	64	6.7177	
28	69	71	426	62	6.7173	
29	65	61	477	60	6.7169	
30	8.508 5462	8.509 1350	1.70449	2.2958	6.7263	
31	54	40	480	57	6.7259	
32	51	30	512	55	6.7255	
33	48	19	544	53	6.7251	
34	45	8.509 1309	575	51	6.7247	
35	41	8.509 1299	607	49	6.7243	
36	38	82	639	47	6.7239	
37	34	74	670	45	6.7235	
38	31	66	701	43	6.7231	
39	28	58	733	41	6.7227	
40	8.508 5428	8.509 1248	1.70765	2.2939	6.7322	7.548
41	24	87	796	37	6.7318	
42	21	77	828	35	6.7314	
43	17	67	860	34	6.7310	
44	14	8.509 1207	891	32	6.7306	
45	11	8.509 1196	923	30	6.7302	
46	07	86	955	28	6.7298	
47	04	76	1.70986	26	6.7294	
48	8.508 5400	66	1.71018	24	6.7290	
49	8.508 5397	56	060	22	6.7286	
50	8.508 5394	8.509 1145	1.71082	2.2920	6.7381	
51	90	85	114	18	6.7377	
52	87	75	145	16	6.7373	
53	83	65	177	14	6.7369	
54	80	8.509 1104	209	12	6.7365	
55	77	8.509 1094	241	10	6.7361	
56	73	84	273	08	6.7357	
57	70	74	305	06	6.7353	
58	66	64	337	04	6.7349	
59	63	54	368	02	6.7345	
60	8.508 5360	8.509 1043	1.71400	2.2901	6.7440	7.549

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 64°.

Lat.		log A diff. 1"=−0.06	log B diff. 1"=−0.17	log C diff. 1"=+0.54	log D diff. 1"=−0.03	log E diff. 1"=+0.10	log F diff. 10"=−4.7
°	'						
64	00	8.508 5360	8.509 1043	1.71400	2.2901	6.7440	7.529
	1	56	33	432	2.2899	46	
	2	53	23	464	97	52	
	3	49	13	496	95	58	
	4	46	8.509 1003	528	93	63	
	05	43	8.509 0993	560	91	69	
	6	39	82	592	89	75	
	7	36	72	624	87	81	
	8	33	62	656	85	87	
	9	29	52	688	83	93	
	10	8.508 5326	8.509 0942	1.71720	2.2881	6.7499	
	11	22	32	752	79	6.7505	
	12	19	22	785	77	11	
	13	16	12	817	75	17	
	14	12	8.509 0902	849	73	23	
	15	09	8.509 0891	881	71	29	
	16	06	81	913	69	35	
	17	8.508 5302	71	945	67	41	
	18	8.508 5299	61	1.71977	65	47	
	19	96	51	1.72010	63	53	
	20	8.508 5292	8.509 0841	1.72042	2.2861	6.7559	7.520
	21	89	31	074	59	65	
	22	85	21	106	57	71	
	23	82	11	139	55	77	
	24	79	8.509 0801	171	53	83	
	25	75	8.509 0791	203	51	89	
	26	72	81	235	49	6.7595	
	27	69	71	268	47	6.7601	
	28	65	61	300	45	07	
	29	62	51	332	42	13	
	30	8.508 5259	8.509 0741	1.72365	2.2840	6.7619	
	31	55	31	397	38	25	
	32	52	21	430	36	31	
	33	49	11	462	34	37	
	34	45	8.509 0701	495	32	43	
	35	42	8.509 0691	527	30	49	
	36	39	81	559	28	56	
	37	35	71	592	26	62	
	38	32	61	624	24	68	
	39	29	51	657	22	74	
	40	8.508 5225	8.509 0641	1.72689	2.2820	6.7680	7.511
	41	22	31	722	18	86	
	42	19	21	755	16	92	
	43	15	11	787	14	6.7698	
	44	12	8.509 0601	820	12	6.7704	
	45	09	8.509 0591	852	10	10	
	46	05	81	885	07	16	
	47	8.508 5202	71	918	05	22	
	48	8.508 5199	61	950	03	28	
	49	95	51	1.72983	2.2801	35	
	50	8.508 5192	8.509 0541	1.73016	2.2799	6.7741	
	51	89	31	048	97	47	
	52	86	21	081	95	53	
	53	82	11	114	93	59	
	54	79	8.509 0501	146	91	65	
	55	76	8.509 0491	179	89	71	
	56	72	82	212	87	77	
	57	69	72	245	84	84	
	58	66	62	278	82	90	
	59	62	52	310	80	6.7796	
	60	8.508 5159	8.509 0442	1.73343	2.2778	6.7802	7.501

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 60°.

Lat.	log A dist. 1° = -0.05	log B dist. 1° = -0.15	log C dist. 1° = +0.25	log D dist. 1° = -0.44	log E dist. 1° = +0.10	log F dist. 1° = -4.0
55	8.508 5159	8.509 0442	1.73342	2.2776	6.7882	7.501
1	86	82	376	76	88	
2	82	22	409	74	14	
3	49	12	442	73	20	
4	46	8.509 0402	475	70	27	
06	43	8.509 0386	508	68	33	
6	39	82	541	66	39	
7	36	78	574	65	45	
8	33	65	607	61	51	
9	30	58	640	59	57	
10	8.508 5123	8.509 0344	1.73371	2.2767	6.7884	
11	28	84	706	56	70	
12	30	24	739	53	76	
13	17	14	772	50	82	
14	13	8.509 0304	805	48	88	
15	10	8.509 0286	838	46	6.7896	
16	07	55	871	44	6.7901	
17	03	75	904	43	67	
18	8.508 5100	85	937	40	13	
19	8.508 5097	85	1.73370	38	19	
20	8.508 5094	8.509 0246	1.74004	2.2736	6.7936	7.481
21	80	86	967	38	22	
22	87	26	979	31	28	
23	84	16	108	29	44	
24	81	8.509 0206	126	27	51	
25	77	8.509 0197	170	24	57	
26	74	87	208	23	63	
27	71	77	236	20	69	
28	68	67	270	18	76	
29	64	57	308	16	82	
30	8.508 5081	8.509 0148	1.74336	2.2714	6.7966	
31	58	88	370	11	6.7994	
32	54	28	403	09	6.8001	
33	51	18	436	07	07	
34	48	8.509 0109	470	05	13	
35	45	8.509 0099	508	■	19	
36	41	89	537	2.2700	■	
37	38	80	570	2.2698	82	
38	36	70	604	96	88	
39	32	60	637	94	44	
40	8.508 5029	8.509 0051	1.74670	2.2692	6.8051	7.481
41	25	41	704	89	57	
42	22	31	738	87	63	
43	19	22	771	85	70	
44	16	12	806	83	76	
45	13	8.509 0002	838	■	82	
46	09	8.508 9993	872	■	89	
47	06	83	906	76	6.8096	
48	03	73	939	74	6.8101	
49	8.508 5000	64	1.74873	72	07	
50	8.508 4996	8.508 9964	1.75007	2.2669	6.8114	
51	93	44	940	67	20	
52	90	35	974	65	27	
53	87	25	108	63	33	
54	84	15	142	60	39	
55	80	8.508 9906	175	58	■	
56	77	8.508 9896	209	56	52	
57	74	■	243	53	58	
58	71	77	277	51	65	
59	68	67	311	49	71	
60	8.508 4964	8.508 9858	1.75344	2.2647	6.8177	7.471

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 66°.

Lat.		log A diff. 1" = -0.05	log B diff. 1" = -0.16	log C diff. 1" = +0.57	log D diff. 1" = -0.04	log E diff. 1" = +0.11	log F diff. 10' = -5.3
°	'						
66	00	8.508 4964	8.508 9858	1.75344	2.2647	6.8177	7.471
	1	61	48	378	44	84	
	2	58	39	412	42	90	
	3	55	29	446	40	6.8196	
	4	52	20	480	38	6.8203	
	05	48	10	514	35	09	
	6	45	8.508 9801	548	33	16	
	7	42	8.508 9791	582	31	22	
	8	39	82	616	28	28	
	9	36	72	650	26	35	
	10	8.508 4933	8.508 9762	1.75684	2.2624	6.8241	
	11	29	53	718	22	48	
	12	26	43	752	19	54	
	13	23	34	786	17	61	
	14	20	24	820	15	67	
	15	17	14	854	12	73	
	16	13	8.508 9705	889	10	80	
	17	10	8.508 9696	923	08	86	
	18	07	86	957	06	93	
	19	04	77	1.75991	03	6.8299	
	20	8.508 4901	8.508 9667	1.76025	2.2601	6.8306	7.461
	21	8.508 4898	58	060	2.2598	12	
	22	95	48	094	96	19	
	23	91	39	128	94	25	
	24	88	29	163	91	31	
	25	85	20	197	89	38	
	26	82	11	231	87	44	
	27	79	8.508 9601	266	84	51	
	28	76	8.508 9592	300	82	57	
	29	73	82	334	80	64	
	30	8.508 4869	8.508 9573	1.76369	2.2578	6.8370	
	31	66	63	403	75	77	
	32	63	54	438	73	83	
	33	60	44	472	70	90	
	34	57	35	507	68	6.8396	
	35	54	25	541	66	6.8403	
	36	50	16	576	63	09	
	37	47	8.508 9507	610	61	16	
	38	44	8.508 9497	645	59	22	
	39	41	88	679	56	29	
	40	8.508 4838	8.508 9478	1.76714	2.2554	6.8436	7.450
	41	35	69	749	51	42	
	42	32	60	783	49	49	
	43	29	51	818	47	55	
	44	26	41	853	44	62	
	45	22	32	887	42	68	
	46	19	23	922	39	75	
	47	16	13	957	37	81	
	48	13	8.508 9404	1.76991	35	88	
	49	10	8.508 9395	1.77026	32	6.8496	
	50	8.508 4807	8.508 9385	1.77061	2.2530	6.8501	
	51	04	76	096	27	08	
	52	8.508 4801	66	131	25	14	
	53	8.508 4797	57	166	23	21	
	54	94	48	200	20	27	
	55	91	38	235	18	34	
	56	88	29	270	15	41	
	57	85	20	305	13	47	
	58	82	10	340	11	54	
	59	79	8.508 9301	375	08	60	
	60	8.508 4776	8.508 9292	1.77410	2.2506	6.8567	7.440



TABLE 22.—Geodetic position computations—Continued.

LATITUDE 67°.

Lat.		log A diff. 1" = -0.05	log B diff. 1" = -0.15	log C diff. 1" = +0.59	log D diff. 1" = -0.04	log E diff. 1" = +0.11	log F diff. 10' = -5.6
°	'						
67	00	8.508 4776	8.508 9292	1.77410	2.2506	6.8567	7.440
	1	78	83	445	08	74	
	2	70	73	480	2.2501	80	
	3	66	64	515	2.2498	87	
	4	63	55	550	96	6.8594	
	05	60	46	585	93	6.8600	
	6	57	36	620	91	07	
	7	54	27	656	89	14	
	8	51	18	691	86	20	
	9	48	8.508 9208	726	84	27	
	10	8.508 4745	8.508 9199	1.77761	2.2481	6.8634	
	11	42	90	796	79	40	
	12	39	81	831	76	47	
	13	36	72	867	74	54	
	14	33	62	902	71	60	
	15	30	53	937	69	67	
	16	26	44	1.77973	66	74	
	17	23	35	1.78008	64	80	
	18	20	26	043	61	87	
	19	17	16	079	59	6.8694	
	20	8.508 4714	8.508 9107	1.78114	2.2456	6.8700	7.429
	21	11	8.508 9098	149	54	07	
	22	08	89	185	51	14	
	23	05	80	220	49	20	
	24	8.508 4702	71	256	46	27	
	25	8.508 4699	62	291	44	34	
	26	96	52	327	41	41	
	27	93	43	362	39	47	
	28	90	34	398	36	54	
	29	87	25	433	34	61	
	30	8.508 4684	8.508 9016	1.78469	2.2431	6.8768	
	31	81	8.508 9007	505	29	74	
	32	78	8.508 8998	540	26	81	
	33	75	88	576	24	88	
	34	72	79	612	21	6.8795	
	35	68	70	647	19	6.8802	
	36	65	61	683	16	08	
	37	62	52	719	14	15	
	38	59	43	755	11	22	
	39	56	34	790	09	29	
	40	8.508 4653	8.508 8925	1.78826	2.2406	6.8835	7.418
	41	50	16	862	03	42	
	42	47	8.508 8907	898	2.2401	49	
	43	44	8.508 8898	934	2.2398	56	
	44	41	89	1.78970	96	63	
	45	38	80	1.79006	93	70	
	46	35	71	042	91	76	
	47	32	62	078	88	83	
	48	29	53	114	86	90	
	49	26	44	150	83	6.8897	
	50	8.508 4623	8.508 8834	1.79186	2.2380	6.8904	
	51	20	25	222	78	10	
	52	17	16	258	75	17	
	53	14	8.508 8807	294	73	24	
	54	11	8.508 8798	330	70	31	
	55	08	89	366	67	38	
	56	05	80	402	65	45	
	57	8.508 4602	71	438	62	52	
	58	8.508 4590	62	474	60	59	
	59	96	54	511	57	65	
	60	8.508 4593	8.508 8745	1.79547	2.2354	6.8972	7.406

TABLE 22.—(Geodetic position computations—Continued.

LATITUDE 68°.

Lat.		log A diff. 1" = -0.05	log B diff. 1" = -0.15	log C diff. 1" = +0.62	log D diff. 1" = -0.4	log E diff. 1" = +0.12	log F diff. 10' = .5.9
°	'						
68	00	8.508 4593	8.508 8745	1.79547	2.2354	6.8972	7.406
	1	90	36	583	52	79	
	2	87	27	620	49	86	
	3	84	18	656	47	6.8993	
	4	81	09	692	44	6.9000	
	05	78	8.508 8700	728	41	07	
	6	76	8.508 8691	765	39	14	
	7	73	82	801	36	21	
	8	70	73	838	33	28	
	9	67	64	874	31	35	
	10	8.508 4564	8.508 8656	1.79911	2.2328	6.9042	
	11	61	47	947	26	48	
	12	58	38	1.79984	23	55	
	13	55	29	1.80020	20	62	
	14	52	20	057	18	69	
	15	49	11	093	15	76	
	16	46	8.508 8602	130	12	83	
	17	43	8.508 8593	166	10	90	
	18	40	84	203	07	6.9097	
	19	37	75	240	04	6.9104	
	20	8.508 4534	8.508 8566	1.80276	2.2302	6.9111	7.395
	21	31	58	313	2.2299	18	
	22	28	49	350	96	25	
	23	25	40	387	94	32	
	24	22	31	423	91	39	
	25	19	22	460	88	46	
	26	16	13	497	85	53	
	27	13	8.508 8505	534	83	60	
	28	10	8.508 8496	571	80	67	
	29	07	87	608	77	74	
	30	8.508 4504	8.508 8478	1.80645	2.2275	6.9181	
	31	8.508 4501	69	682	72	88	
	32	8.508 4499	60	719	69	6.9195	
	33	96	52	756	67	6.9203	
	34	93	43	793	64	10	
	35	90	34	830	61	17	
	36	87	25	867	58	24	
	37	84	17	904	56	31	
	38	81	8.508 8408	941	53	38	
	39	78	8.508 8399	1.80978	50	45	
	40	8.508 4475	8.508 8390	1.81015	2.2248	6.9252	7.383
	41	72	82	052	45	59	
	42	70	73	089	42	66	
	43	67	64	127	39	73	
	44	64	56	164	36	80	
	45	61	47	201	34	88	
	46	58	38	239	31	6.9295	
	47	55	30	276	28	6.9302	
	48	52	21	313	26	09	
	49	49	12	350	23	16	
	50	8.508 4446	8.508 8303	1.81388	2.2220	6.9323	
	51	43	8.508 8295	425	17	30	
	52	40	86	463	14	37	
	53	38	77	500	12	45	
	54	35	68	538	09	52	
	55	32	60	575	06	59	
	56	29	51	613	03	66	
	57	26	43	650	2.2201	73	
	58	23	34	688	2.2198	80	
	59	20	25	726	95	88	
	60	8.508 4417	8.508 8217	1.81763	2.2192	6.9395	7.371

TABLE 22.—*Geodetic position computations—Continued.*

LATITUDE 69°.

Lat.		log A diff. 1' = -0.06	log B diff. 1' = -0.14	log C diff. 1' = +0.44	log D diff. 1' = -0.05	log E diff. 1' = +0.12	log F diff. 1' = -0.2
69	00	8.508 4417	8.508 8217	1.81768	2.2192	6.9806	7.371
	1	14	08	801	89	6.9402	
	2	12	8.508 8200	838	87	09	
	3	09	8.508 8191	876	84	16	
	4	06	82	914	81	24	
	05	08	74	952	78	31	
	6	8.508 4400	86	1.81969	75	38	
	7	8.508 4387	87	1.82027	72	45	
	8	94	48	085	70	52	
	9	92	39	123	67	60	
	10	8.508 4380	8.508 8121	1.82141	2.2184	6.9487	
	11	86	22	179	61	74	
	12	83	14	217	58	82	
	13	80	8.508 8106	255	55	89	
	14	77	8.508 8096	293	53	6.9496	
	15	74	86	330	50	6.9508	
	16	71	79	369	47	11	
	17	68	71	407	44	18	
	18	66	63	445	41	25	
	19	63	54	483	38	32	
	20	8.508 4380	8.508 8045	1.82221	2.2186	6.9540	7.366
	21	57	37	520	35	47	
	22	55	28	557	30	54	
	23	52	20	595	27	62	
	24	49	11	674	24	69	
	25	46	8.508 8008	712	21	76	
	26	43	8.508 7994	750	18	84	
	27	40	86	789	15	91	
	28	37	77	827	12	6.9568	
	29	35	69	865	10	6.9586	
	30	8.508 4332	8.508 7960	1.82304	2.2107	6.9518	
	31	29	52	942	04	20	
	32	26	43	1.82361	2.2101	28	
	33	23	35	1.83010	2.2096	35	
	34	21	26	058	95	42	
	35	18	18	096	92	50	
	36	15	09	135	89	57	
	37	12	8.508 7901	173	86	65	
	38	09	8.508 7893	212	83	72	
	39	06	84	250	80	79	
	40	8.508 4304	8.508 7876	1.82389	2.2078	6.9687	7.346
	41	8.508 4301	67	828	75	6.9694	
	42	8.508 4298	59	866	72	6.9702	
	43	95	51	405	69	09	
	44	93	42	444	66	16	
	45	90	34	483	63	24	
	46	87	26	521	60	31	
	47	84	17	560	57	39	
	48	81	09	599	54	46	
	49	79	8.508 7901	638	51	54	
	50	8.508 4276	8.508 7792	1.82677	2.2048	6.9761	
	51	73	84	716	45	69	
	52	70	76	755	42	76	
	53	67	67	794	39	84	
	54	65	59	833	36	91	
	55	62	50	872	33	6.9790	
	56	59	42	911	30	6.9806	
	57	56	34	950	27	14	
	58	54	26	1.83089	24	21	
	59	51	17	1.84028	21	29	
	60	8.508 4248	8.508 7709	1.84068	2.2018	6.9836	7.333

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 70°.

Lat.		log A diff. 1''=−0.04	log B diff. 1''=−0.14	log C diff. 1''=+0.67	log D diff. 1''=−0.06	log E diff. 1''=+0.13	log F diff. 10' = −6.7
°	'						
70	00	8.508 4248	8.508 7709	1.84068	2.2018	6.9836	7.333
	1	45	8.508 7701	107	15	44	
	2	43	8.508 7692	146	12	51	
	3	40	84	185	09	59	
	4	37	76	225	06	66	
	05	34	68	264	03	74	
	6	32	59	303	2.2000	81	
	7	29	51	343	2.1997	89	
	8	26	43	382	94	6.9896	
	9	23	35	421	91	6.9904	
	10	8.508 4221	8.508 7626	1.84461	2.1988	6.9912	
	11	18	18	500	85	19	
	12	15	10	540	82	27	
	13	12	8.508 7602	579	79	34	
	14	10	8.508 7594	619	76	42	
	15	07	86	658	73	50	
	16	04	78	698	70	57	
	17	8.508 4201	69	738	66	65	
	18	8.508 4199	61	778	63	73	
	19	96	52	817	60	80	
	20	8.508 4193	8.508 7544	1.84857	2.1957	6.9988	7.320
	21	90	36	897	54	6.9995	
	22	88	28	937	51	7.0003	
	23	85	20	1.84976	48	11	
	24	82	12	1.85016	45	18	
	25	80	8.508 7504	056	42	26	
	26	77	8.508 7495	096	39	34	
	27	74	87	136	36	41	
	28	71	79	176	33	49	
	29	69	71	216	29	57	
	30	8.508 4166	8.508 7462	1.85256	2.1926	7.0064	
	31	63	54	296	23	72	
	32	60	46	336	20	80	
	33	58	38	376	17	88	
	34	55	30	416	14	7.0095	
	35	52	22	456	11	7.0103	
	36	50	14	497	08	11	
	37	47	8.508 7406	537	04	19	
	38	44	8.508 7398	577	2.1901	26	
	39	42	90	618	2.1898	34	
	40	8.508 4139	8.508 7382	1.85658	2.1895	7.0142	7.307
	41	36	74	698	92	50	
	42	34	66	739	89	57	
	43	31	58	779	85	65	
	44	28	50	819	82	73	
	45	26	42	860	79	81	
	46	23	34	900	76	88	
	47	20	26	941	73	7.0196	
	48	18	18	1.85981	70	7.0204	
	49	15	10	1.86022	66	12	
	50	8.508 4112	8.508 7302	1.86063	2.1863	7.0220	
	51	10	8.508 7294	103	60	27	
	52	07	86	144	57	35	
	53	04	77	185	54	43	
	54	8.508 4101	69	225	50	51	
	55	8.508 4099	61	266	47	59	
	56	96	53	307	44	67	
	57	93	45	348	41	75	
	58	91	38	389	38	82	
	59	88	30	430	34	90	
	60	8.508 4086	8.508 7222	1.86470	2.1831	7.0298	7.293

TABLE 22.—Geodetic position computations—Continued.

LATITUDE 71°.

Lat.		log A diff. 1" = -0.04	log B diff. 1" = -0.13	log C diff. 1" = +0.70	log D diff. 1" = -0.05	log E diff. 1" = +0.13	log F diff. 10" = 7.2
°	'						
71	00	8.508 4086	8.508 7222	1.86470	2.1831	7.0298	7.293
	1	83	14	511	28	7.6306	
	2	80	8.508 7206	552	25	14	
	3	78	8.508 7198	593	21	22	
	4	75	90	634	18	30	
	05	72	82	675	15	38	
	6	70	74	717	12	46	
	7	67	66	758	08	54	
	8	64	58	799	05	62	
	9	62	50	840	2.1802	70	
	10	8.508 4059	8.508 7142	1.86881	2.1799	7.0378	
	11	57	34	923	95	85	
	12	54	27	1.86964	92	7.0393	
	13	51	19	1.87005	89	7.0401	
	14	49	11	046	86	09	
	15	46	8.508 7103	088	82	17	
	16	43	8.508 7095	129	79	25	
	17	41	87	171	76	33	
	18	38	79	212	72	41	
	19	36	72	254	69	49	
	20	8.508 4033	8.508 7064	1.87295	2.1766	7.0457	7.279
	21	30	56	337	62	65	
	22	28	48	378	59	73	
	23	25	40	420	56	82	
	24	23	33	462	52	90	
	25	20	25	503	49	7.0498	
	26	17	17	545	46	7.0506	
	27	15	09	587	42	14	
	28	12	8.508 7002	629	39	22	
	29	10	8.508 6994	671	36	30	
	30	8.508 4007	8.508 6986	1.87712	2.1732	7.0538	
	31	05	78	754	29	46	
	32	8.508 4002	71	796	26	54	
	33	8.508 3999	63	838	22	62	
	34	97	55	880	19	70	
	35	94	47	922	16	79	
	36	92	40	1.87964	12	87	
	37	89	32	1.88006	09	7.0595	
	38	86	24	049	06	7.0603	
	39	84	16	091	2.1702	11	
	40	8.508 3981	8.508 6908	1.88133	2.1699	7.0619	7.265
	41	79	8.508 6901	175	95	27	
	42	76	8.508 6893	217	92	36	
	43	74	85	260	89	44	
	44	71	78	302	85	52	
	45	68	70	344	82	60	
	46	66	62	387	78	68	
	47	63	55	429	75	77	
	48	61	47	472	72	85	
	49	58	40	514	68	7.0693	
	50	8.508 3956	8.508 6832	1.88557	2.1665	7.0701	
	51	53	24	599	61	09	
	52	51	17	642	58	18	
	53	48	09	685	54	26	
	54	46	8.508 6802	727	51	34	
	55	43	8.508 6794	770	48	42	
	56	41	86	813	44	51	
	57	38	79	855	41	59	
	58	36	71	898	37	67	
	59	33	64	941	34	75	
	60	8.508 3930	8.508 6756	1.88984	2.1630	7.0784	7.250

Table of values of  $\log \sec \frac{1}{2} (\Delta \varphi)$ .

$\Delta \varphi$	$\log \sec \frac{1}{2} (\Delta \varphi)$	$\Delta \varphi$	$\log \sec \frac{1}{2} (\Delta \varphi)$	$\Delta \varphi$	$\log \sec \frac{1}{2} (\Delta \varphi)$	$\Delta \varphi$	$\log \sec \frac{1}{2} (\Delta \varphi)$	$\Delta \varphi$	$\log \sec \frac{1}{2} (\Delta \varphi)$
'		'		'		'		'	
10	0.000 000	28	0.000 004	46	0.000 010	64	0.000 019	82	0.000 031
11	1	29	4	47	10	65	19	83	32
12	1	30	4	48	11	66	20	84	32
13	1	31	4	49	11	67	21	85	33
14	1	32	5	50	11	68	21	86	34
15	1	33	5	51	12	69	22	87	35
16	1	34	5	52	12	70	22	88	36
17	1	35	6	53	13	71	23	89	36
18	1	36	6	54	13	72	24	90	37
19	2	37	6	55	14	73	24	91	38
20	2	38	7	56	14	74	25	92	39
21	2	39	7	57	15	75	26	93	40
22	2	40	7	58	15	76	26	94	41
23	2	41	8	59	16	77	27	95	41
24	3	42	8	60	16	78	28	96	42
25	3	43	8	61	17	79	29	97	43
26	3	44	9	62	18	80	29	98	44
27	3	45	9	63	18	81	30	99	45

To convert:		To convert:	
Meters to feet.	Feet to meters.	Kilometers to statute miles.	Statute miles to kilometers.
1 = 3.280 833	1 = 0.304 8006	1 = 0.621 3699	1 = 1.609 347
2 = 6.561 667	2 = 0.609 6012	2 = 1.242 7399	2 = 3.218 694
3 = 9.842 500	3 = 0.914 4018	3 = 1.864 1098	3 = 4.828 042
4 = 13.123 333	4 = 1.219 2024	4 = 2.485 4798	4 = 6.437 389
5 = 16.404 166	5 = 1.524 0030	5 = 3.106 8497	5 = 8.046 736
6 = 19.685 000	6 = 1.828 8037	6 = 3.728 2196	6 = 9.656 083
7 = 22.965 833	7 = 2.133 6043	7 = 4.349 5896	7 = 11.265 430
8 = 26.246 666	8 = 2.438 4049	8 = 4.970 9595	8 = 12.874 778
9 = 29.527 500	9 = 2.743 2055	9 = 5.592 3295	9 = 14.484 125

Table of corrections to longitude for difference in arc and sine.

log s (—)	log dif- ference.	log Δλ (+)	log s (—)	log dif- ference.	log Δλ (+)	log s (—)	log dif- ference.	log Δλ (+)
3.876	0.000 0001	2.885	4.871	0.000 0098	3.880	5.172	0.000 0392	3.681
4.026	02	2.585	4.882	103	3.891	5.178	402	3.687
4.114	03	2.623	4.892	108	3.401	5.183	412	3.692
4.177	04	2.686	4.903	114	3.412	5.188	422	3.697
4.225	05	2.734	4.913	119	3.422	5.193	433	3.702
4.265	06	2.774	4.922	124	3.431	5.199	443	3.708
4.298	07	2.807	4.932	130	3.441	5.204	453	3.713
4.327	08	2.836	4.941	136	3.450	5.209	464	3.718
4.353	09	2.862	4.950	142	3.459	5.214	474	3.723
4.376	10	2.885	4.959	147	3.468	5.219	486	3.728
4.396	11	2.905	4.968	153	3.477	5.223	497	3.732
4.415	12	2.924	4.976	160	3.485	5.228	508	3.737
4.433	13	2.942	4.985	166	3.494	5.233	519	3.742
4.449	14	2.958	4.993	172	3.502	5.238	530	3.747
4.464	15	2.973	5.002	179	3.511	5.242	541	3.751
4.478	16	2.987	5.010	186	3.519	5.247	553	3.756
4.491	17	3.000	5.017	192	3.526	5.251	565	3.760
4.503	18	3.012	5.025	199	3.534	5.256	577	3.765
4.526	20	3.035	5.033	206	3.542	5.260	588	3.769
4.548	23	3.057	5.040	213	3.549	5.265	600	3.774
4.570	25	3.079	5.047	221	3.556	5.269	613	3.778
4.591	27	3.100	5.054	228	3.563	5.273	625	3.782
4.612	30	3.121	5.062	236	3.571	5.278	637	3.787
4.631	33	3.140	5.068	243	3.577	5.282	650	3.791
4.649	36	3.158	5.075	251	3.584	5.286	663	3.795
4.667	39	3.176	5.082	259	3.591	5.290	674	3.799
4.684	42	3.193	5.088	267	3.597	5.294	687	3.803
4.701	45	3.210	5.095	275	3.604	5.299	702	3.808
4.716	48	3.225	5.102	284	3.611	5.303	716	3.812
4.732	52	3.241	5.108	292	3.617	5.307	729	3.816
4.746	56	3.255	5.114	300	3.623	5.311	743	3.820
4.761	59	3.270	5.120	309	3.629	5.315	757	3.824
4.774	63	3.283	5.126	318	3.635	5.319	771	3.828
4.788	67	3.297	5.132	327	3.641	5.323	785	3.832
4.801	71	3.310	5.138	336	3.647	5.327	800	3.836
4.813	75	3.322	5.144	345	3.653	5.331	814	3.840
4.825	80	3.334	5.150	354	3.659	5.335	829	3.844
4.834	84	3.343	5.156	364	3.665	5.339	845	3.848
4.849	89	3.358	5.161	373	3.670	5.343	861	3.852
4.860	94	3.369	5.167	383	3.676	5.347	877	3.856

INVERSE SOLUTION.

HAVING LATITUDES AND LONGITUDES OF TWO POINTS TO COMPUTE AZIMUTHS AND DISTANCES.

The following example shows the method of performing the operation. The northernmost point should be used as the initial position, then all signs for (I), (II), and (III) are +, and for (IV) —. The value of Δλ may be either + or —, but this sign need only be used in determining in which quadrant the azimuth angle α falls, i. e., the sign of tan α (12). An inspection of a rough plat of the positions will also determine this. The correction to Δλ is found from a distance scaled off from the plat, and need not be very close. In (8) the term (I+II)<sup>2</sup> is the square of the difference of latitude Δφ in seconds. Since (IV) is always small, log (I) in (8) may be taken as log of Δφ from (1). If cos α is smaller than sin α, find s from log s cos α in (11). As a check on the work compute the second

position, using distance and azimuth found as above. The order of solution is shown by figures in parentheses. The cosines of latitudes are proportional to the intercepted parallels.

Latitude =  $\phi = 38^{\circ} 23' 27'' .00$  Given.

$\phi' = 37^{\circ} 45' 09'' .30$  Given.

$$\Delta \phi = 38' 17'' .70 \\ = 2297'' .70 \quad (1)$$

$$\log \Delta \phi = 3.3612933$$

$$\log C = 1.30360$$

$$\log S^2 \sin^2 a = 8.75770$$

$$\log (II) = 0.06130 \quad (7)$$

$$(II) = 1'' .152$$

$$\log D = 2.3812$$

$$\log (I + II)^2 = 6.7226$$

$$\log (III) = 9.1038 \quad (8)$$

$$III = 0'' .13$$

$$\log E = 6.0711$$

$$\log S^2 \sin^2 a = 8.7577$$

$$\log I = 3.3613$$

$$\log IV = 8.1901 \quad (9)$$

$$IV = -'' .02$$

$$(II) = + 1.15''$$

$$(III) = + 0.13$$

$$IV = - .02$$

$$\text{Sum} = + 1.26'' \quad (10)$$

$$\Delta \phi = 2297.70$$

$$(I) = 2296.44$$

Longitude =  $\lambda = 104^{\circ} 32' 48'' .20$  Given

$\lambda' = 104^{\circ} 49' 05'' .50$  Given

$$\Delta \lambda = 16' 17'' .30 + \\ = 977'' .30 + \quad (2)$$

$$\log \Delta \lambda = 2.9900279$$

$$\log \Delta \lambda \text{ correction} = + 16$$

$$\log S (\text{scaled distance}) \text{ correction} = - 99$$

$$(\text{apply with opposite sign}) - 83 \quad (3)$$

$$\log \Delta \lambda' = 2.9900362 \quad (4)$$

$$\log A' = 8.5091750 \quad (5)$$

$$\text{Sec } \phi' = 0.1020092$$

$$8.6111842 \quad (+)$$

$$\log \Delta \lambda' = 2.9900362 \quad (+)$$

$$\log S \sin a = 4.3788520 \quad (+) \quad (6)$$

$$\log S \cos a = 4.8500742 \quad (+) \quad (11)$$

$$\frac{\sin a}{\cos a} = \tan a = 9.5287778 \quad (12)$$

$$\cos a$$

$$\log (I) = 3.3610475$$

$$\log (B) = 8.5109733$$

$$\log S \cos a = 4.8500742 \quad (11)$$

$$\text{Azimuth} = a = 18^{\circ} 40' 10'' .8 \quad (13)$$

$$\log S \sin a = 4.3788520$$

$$\log \sin a = 9.5053013$$

$$\log \text{distance} = \log S = 4.8735507 \quad (14)$$



TABLE 23 — *Log m*, for use in computing spherical excess.  
[Computed for the Clarke spheroid of 1866.]

Lat.		Log m.	Lat.		Log m.	Lat.		Log m.
°	'		°	'		°	'	
0	00	1.40695	25	00	1.40590	50	00	1.40349
0	30	1.40695	25	30	1.40586	50	30	1.40344
1	00	1.40695	26	00	1.40582	51	00	1.40339
1	30	1.40694	26	30	1.40578	51	30	1.40334
2	00	1.40694	27	00	1.40573	52	00	1.40329
2	30	1.40694	27	30	1.40569	52	30	1.40324
3	00	1.40693	28	00	1.40565	53	00	1.40319
3	30	1.40693	28	30	1.40560	53	30	1.40314
4	00	1.40692	29	00	1.40556	54	00	1.40309
4	30	1.40691	29	30	1.40552	54	30	1.40304
5	00	1.40690	30	00	1.40548	55	00	1.40299
5	30	1.40689	30	30	1.40544	55	30	1.40295
6	00	1.40688	31	00	1.40539	56	00	1.40290
6	30	1.40687	31	30	1.40534	56	30	1.40285
7	00	1.40686	32	00	1.40530	57	00	1.40280
7	30	1.40685	32	30	1.40525	57	30	1.40276
8	00	1.40683	33	00	1.40520	58	00	1.40271
8	30	1.40682	33	30	1.40516	58	30	1.40266
9	00	1.40680	34	00	1.40511	59	00	1.40262
9	30	1.40679	34	30	1.40506	59	30	1.40257
10	00	1.40677	35	00	1.40501	60	00	1.40253
10	30	1.40675	35	30	1.40496	60	30	1.40249
11	00	1.40673	36	00	1.40491	61	00	1.40244
11	30	1.40671	36	30	1.40486	61	30	1.40240
12	00	1.40669	37	00	1.40482	62	00	1.40235
12	30	1.40667	37	30	1.40477	62	30	1.40231
13	00	1.40665	38	00	1.40472	63	00	1.40227
13	30	1.40663	38	30	1.40467	63	30	1.40223
14	00	1.40660	39	00	1.40462	64	00	1.40219
14	30	1.40658	39	30	1.40457	64	30	1.40215
15	00	1.40655	40	00	1.40452	65	00	1.40210
15	30	1.40653	40	30	1.40446	65	30	1.40207
16	00	1.40650	41	00	1.40441	66	00	1.40203
16	30	1.40647	41	30	1.40436	66	30	1.40199
17	00	1.40644	42	00	1.40431	67	00	1.40195
17	30	1.40642	42	30	1.40426	67	30	1.40192
18	00	1.40639	43	00	1.40421	68	00	1.40188
18	30	1.40636	43	30	1.40416	68	30	1.40185
19	00	1.40632	44	00	1.40411	69	00	1.40181
19	30	1.40629	44	30	1.40406	69	30	1.40178
20	00	1.40626	45	00	1.40400	70	00	1.40174
20	30	1.40623	45	30	1.40395	70	30	1.40171
21	00	1.40619	46	00	1.40390	71	00	1.40168
21	30	1.40616	46	30	1.40385	71	30	1.40164
22	00	1.40612	47	00	1.40380	72	00	1.40161
22	30	1.40608	47	30	1.40375			
23	00	1.40605	48	00	1.40369			
23	30	1.40601	48	30	1.40364			
24	00	1.40597	49	00	1.40359			
24	30	1.40594	49	30	1.40354			

APPROXIMATE SPHERICAL EXCESS.

This may be obtained by dividing the area of the triangle in square miles by 75.5.

TABLE 24.—Mean refraction.

Apparent altitude.			Refraction.			Apparent altitude.			Refraction.			Apparent altitude.			Refraction.			Apparent altitude.			Refraction.		
°	'	"		°	'	"		°	'	"		°	'	"		°	'	"		°	'	"	
0	0	34 54.1	124.9	7	0	7 19.7	9.2	14	0	3 47.4	5.3	28	0	1 48.2	1.5	42	0	64.0	2.2	42	0	64.0	2.2
10		32 49.2	116.9	10		7 10.5	8.8	20		3 42.1	5.1	20		1 46.7	1.4	43		61.8	2.1	43		61.8	2.1
20		30 52.3	108.8	20		7 1.7	8.4	40		3 37.0	4.9	40		1 45.3	1.4	44		59.7	2.0	44		59.7	2.0
30		29 3.5	100.8	30		6 53.3	8.2	15	0	3 32.1	4.7	29	0	1 43.8	1.4	45		57.7	2.0	45		57.7	2.0
40		27 22.7	92.9	40		6 45.1	7.9	20		3 27.4	4.5	20		1 42.4	1.4	46		55.7	1.9	46		55.7	1.9
50		25 49.8	85.2	50		6 37.2	7.6	40		3 22.9	4.3	40		1 41.0	1.4	47		53.8	1.9	47		53.8	1.9
1	0	24 24.6	77.9	8	0	6 29.6	7.3	16	0	3 18.6	4.1	30	0	1 39.7	1.3	48		51.9	1.9	48		51.9	1.9
10		23 6.7	71.1	10		6 22.3	7.1	20		3 14.5	4.0	20		1 38.4	1.3	49		50.2	1.7	49		50.2	1.7
20		21 55.6	64.7	20		6 15.2	6.8	40		3 10.5	3.9	40		1 37.1	1.3	50		48.4	1.8	50		48.4	1.8
30		20 50.9	59.0	30		6 8.4	6.6	17	0	3 6.6	3.7	31	0	1 35.8	1.3	51		46.7	1.7	51		46.7	1.7
40		19 51.9	53.9	40		6 1.8	6.4	20		3 2.9	3.6	20		1 34.5	1.3	52		45.1	1.6	52		45.1	1.6
50		18 58.0	49.4	50		5 55.4	6.1	40		2 59.3	3.5	40		1 33.3	1.2	53		43.5	1.6	53		43.5	1.6
2	0	18 8.6	45.6	9	0	5 49.3	6.0	18	0	2 55.8	3.3	32	0	1 32.1	1.2	54		41.9	1.6	54		41.9	1.6
10		17 23.0	42.3	10		5 43.3	5.7	20		2 52.5	3.2	20		1 30.9	1.2	55		40.4	1.5	55		40.4	1.5
20		16 40.7	39.8	20		5 37.6	5.6	40		2 49.3	3.2	40		1 29.8	1.1	56		38.9	1.5	56		38.9	1.5
30		16 0.9	37.5	30		5 32.0	5.5	40		2 46.1	3.2	40		1 28.7	1.1	57		37.5	1.4	57		37.5	1.4
40		15 23.4	35.6	40		5 26.5	5.2	19	0	2 43.1	3.0	33	0	1 27.6	1.1	58		36.1	1.4	58		36.1	1.4
50		14 47.8	33.2	50		5 21.3	5.1	20		2 40.2	2.9	20		1 26.5	1.1	59		34.7	1.4	59		34.7	1.4
3	0	14 14.6	30.9	10	0	5 16.2	5.0	40		2 37.3	2.9	40		1 25.4	1.1	60		33.3	1.4	60		33.3	1.4
10		13 43.7	28.7	10		5 11.2	4.8	20		2 34.5	2.8	34	0	1 24.3	1.1	61		32.0	1.3	61		32.0	1.3
20		13 15.0	26.7	20		5 6.4	4.7	20		2 31.9	2.6	20		1 23.3	1.1	62		30.7	1.3	62		30.7	1.3
30		12 48.3	24.6	30		5 1.7	4.5	40		2 29.3	2.6	40		1 22.3	1.0	63		29.4	1.3	63		29.4	1.3
40		12 23.7	23.0	40		4 57.2	4.4	21	0	2 26.8	2.5	35	0	1 21.3	1.0	64		28.2	1.2	64		28.2	1.2
50		12 0.7	21.8	50		4 52.8	4.3	20		2 24.3	2.5	20		1 20.3	1.0	65		26.9	1.3	65		26.9	1.3
4	0	11 38.9	20.6	11	0	4 48.5	4.2	40		2 21.9	2.4	40		1 19.3	1.0	66		25.7	1.2	66		25.7	1.2
10		11 18.3	19.7	2	10	4 44.3	4.1	22	0	2 19.6	2.3	36	0	1 18.3	1.0	67		24.5	1.2	67		24.5	1.2
20		10 58.6	19.0	20		4 40.2	3.9	20		2 17.4	2.2	20		1 17.4	0.9	68		23.3	1.2	68		23.3	1.2
30		10 39.6	18.4	30		4 36.3	3.9	40		2 15.2	2.2	40		1 16.5	0.9	69		22.2	1.2	69		22.2	1.2
40		10 21.2	17.9	40		4 32.4	3.7	23	0	2 13.0	2.2	37	0	1 15.6	0.9	70		21.0	1.2	70		21.0	1.2
50		10 3.3	16.8	50		4 28.7	3.7	20		2 10.9	2.1	20		1 14.7	0.9	71		19.9	1.1	71		19.9	1.1
5	0	9 46.5	15.6	12	0	4 25.0	3.6	40		2 8.9	2.0	40		1 13.8	0.9	72		18.8	1.1	72		18.8	1.1
10		9 30.9	14.9	10		4 21.4	3.4	24	0	2 7.0	1.9	38	0	1 12.9	0.9	73		17.7	1.1	73		17.7	1.1
20		9 16.0	14.1	20		4 18.0	3.4	20		2 5.1	1.9	20		1 12.0	0.9	74		16.6	1.1	74		16.6	1.1
30		9 1.9	13.5	30		4 14.6	3.3	40		2 3.2	1.9	40		1 11.2	0.9	75		15.5	1.1	75		15.5	1.1
40		8 48.4	12.8	40		4 11.3	3.2	25	0	2 1.4	1.8	39	0	1 10.3	0.8	76		14.5	1.1	76		14.5	1.1
50		8 35.6	12.3	50		4 8.1	3.2	20		1 59.6	1.8	20		1 9.5	0.8	77		13.4	1.1	77		13.4	1.1
6	0	8 23.3	11.7	13	0	4 4.9	3.1	40		1 57.8	1.8	40		1 8.7	0.8	78		12.3	1.1	78		12.3	1.1
10		8 11.6	11.3	10		4 1.8	3.0	26	0	1 56.1	1.7	40		1 7.9	0.8	79		11.2	1.1	79		11.2	1.1
20		8 0.3	10.8	20		3 58.8	2.9	20		1 54.4	1.7	40		1 7.1	0.8	80		10.2	1.0	80		10.2	1.0
30		7 49.5	10.3	30		3 55.9	2.9	40		1 52.8	1.6	20		1 6.3	0.8	81		9.1	1.0	81		9.1	1.0
40		7 39.2	10.0	40		3 53.0	2.8	27	0	1 51.2	1.6	41	0	1 5.5	0.8	82		8.1	1.0	82		8.1	1.0
50		7 29.2	9.5	50		3 50.2	2.8	40		1 49.7	1.5	40		1 4.7	0.8	86		4.1	1.0	86		4.1	1.0
7	0	7 19.7		14	0	3 47.4	2.8	28	0	1 48.2	1.5	42	0	1 4.0	0.7	90		0.0	4.1	90		0.0	4.1

TABLE 25.—*Corrections for curvature and refraction, in feet=0.574 (distance, miles)<sup>2</sup>.*

(Difference in feet between the apparent and true level at distances varying from 1 to 66 miles.)

Distance, miles.	Difference in feet for—			Distance, miles.	Difference in feet for—		
	Curvature.	Refraction.	Curvature and refraction.		Curvature.	Refraction.	Curvature and refraction.
1	0.7	0.1	0.6	34	771.3	108.0	663.3
2	2.7	0.4	2.3	35	817.4	114.4	703.0
3	6.0	0.8	5.2	36	864.8	121.1	743.7
4	10.7	1.5	9.2	37	913.5	127.9	785.6
5	16.7	2.3	14.4	38	963.5	134.9	828.6
6	24.0	3.4	20.6	39	1,014.9	142.1	872.8
7	32.7	4.6	28.1	40	1,067.6	149.5	918.1
8	42.7	6.0	36.7	41	1,121.7	157.0	964.7
9	54.0	7.6	46.4	42	1,177.0	164.8	1,012.2
10	66.7	9.3	57.4	43	1,233.7	172.7	1,061.0
11	80.7	11.3	69.4	44	1,291.8	180.8	1,111.0
12	96.1	13.4	82.7	45	1,351.2	189.2	1,162.0
13	112.8	15.8	97.0	46	1,411.9	197.7	1,214.2
14	130.8	18.3	112.5	47	1,474.0	206.3	1,267.7
15	150.1	21.0	129.1	48	1,537.3	215.2	1,322.1
16	170.8	23.9	146.9	49	1,602.0	224.3	1,377.7
17	192.8	27.0	165.8	50	1,668.1	233.5	1,434.6
18	216.2	30.3	185.9	51	1,735.5	243.0	1,492.5
19	240.9	33.7	207.2	52	1,804.2	252.6	1,551.6
20	266.9	37.4	229.5	53	1,874.3	262.4	1,611.9
21	294.3	41.2	253.1	54	1,945.7	272.4	1,673.3
22	322.9	45.2	277.7	55	2,018.4	282.6	1,735.8
23	353.0	49.4	303.0	56	2,092.5	292.9	1,799.6
24	384.3	53.8	330.5	57	2,167.9	303.5	1,864.4
25	417.0	58.4	358.6	58	2,244.6	314.2	1,930.4
26	451.1	63.1	388.0	59	2,322.7	325.2	1,997.5
27	486.4	68.1	418.3	60	2,402.1	336.3	2,065.8
28	523.1	73.2	449.9	61	2,482.8	347.6	2,135.2
29	561.2	78.6	482.6	62	2,564.9	359.1	2,205.8
30	600.5	84.1	516.4	63	2,648.3	370.8	2,277.5
31	641.2	89.8	551.4	64	2,733.0	382.6	2,350.4
32	683.3	95.7	587.6	65	2,819.1	394.7	2,424.4
33	726.6	101.7	624.9	66	2,906.5	406.9	2,499.6

TABLE 26.—FOR OBTAINING DIFFERENCES OF ALTITUDE FOR ANY MINUTE UP TO 15 DEGREES, AND FOR ANY DISTANCE.

[Prepared by Arthur P. Davis.]

EXPLANATION OF TABLE.

The left-hand column is the minutes of the vertical angle, the degrees being denoted by the large number at top of page. The bold-face figures at top of column is the distance in miles. Numbers in the body of the table denote the difference of elevation corresponding to the angle on the left and the distance at top. The correction for curvature, refraction, and height of instrument is always plus; it therefore increases the difference of level for angles of elevation, and is subtracted from the difference of level for angles of depression.

*Example.*—Required the difference of altitude corresponding to a vertical angle of + 9° 18' at a distance of 3.628 miles. On page 253 the tabular number corresponding to 9° 18' and—

	Feet.
A distance of 3 miles is .....	2,594
For a distance of 6 miles is 5,188—for 0.6 is therefore .....	519
For a distance of 2 miles is 1,729—for 0.02 is therefore .....	17
For a distance of 8 miles is 6,917—for 0.008 is therefore .....	7
Correction for curvature, refraction, and height of instrument for 3.6 miles is +.	12
Total difference of altitude .....	+ 3,149

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

0°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument <sup>a</sup>			
										Miles.	Feet.	Miles.	Feet.
1	1.5	3.1	5	6	8	9	11	12	14	1.6	6	10.2	64
2	3.1	6.1	9	12	15	18	22	25	28	2.1	7	10.3	65
3	4.6	9.2	14	18	23	28	32	37	41	2.5	8	10.4	67
4	6.1	12.3	18	25	31	38	43	49	56	2.8	9	10.5	68
5	7.7	15.4	23	31	38	46	54	61	69	3.1	10	10.6	69
6	9.2	18.4	28	37	46	56	65	74	83	3.4	11	10.7	70
7	10.8	21.5	32	43	54	65	75	86	97	3.6	12	10.8	71
8	12.3	24.6	37	49	61	74	86	98	111	3.8	13	10.9	73
9	13.8	27.6	41	55	69	83	97	111	124	4.1	14	11.0	74
10	15.4	30.7	46	61	77	92	108	123	138	4.3	15	11.1	75
11	16.9	33.8	51	68	84	101	118	135	152	4.5	16	11.2	77
12	18.4	36.9	56	74	92	111	129	147	166	4.7	17	11.3	78
13	20.0	39.9	60	80	100	120	140	160	180	4.8	18	11.4	79
14	21.5	43.0	65	86	108	129	151	172	194	5.0	19	11.5	80
15	23.0	46.1	69	92	115	138	161	184	207	5.2	20	11.6	82
16	24.6	49.1	74	98	123	147	172	197	221	5.4	21	11.7	83
17	26.1	52.2	78	104	131	157	183	209	235	5.6	22	11.8	84
18	27.6	55.3	83	111	138	166	194	221	249	5.7	23	11.9	86
19	29.2	58.4	88	117	146	175	204	233	263	5.8	24	12.0	87
20	30.7	61.4	92	123	154	184	215	246	276	6.0	25	12.1	89
21	32.3	64.5	97	129	161	194	226	258	290	6.1	26	12.2	90
22	33.8	67.6	101	135	169	203	237	270	304	6.3	27	12.3	91
23	35.3	70.7	106	141	177	212	247	283	318	6.4	28	12.4	93
24	36.9	73.7	111	147	184	221	258	295	332	6.6	29	12.5	94
25	38.4	76.8	115	154	192	230	269	307	346	6.7	30	12.6	96
26	39.9	79.9	120	160	200	240	280	319	359	6.8	31	12.7	97
27	41.5	82.9	124	166	207	249	290	332	373	6.9	32	12.8	99
28	43.0	86.0	129	172	215	258	301	344	387	7.0	33	12.9	100
29	44.5	89.1	134	178	223	267	312	356	401	7.2	34	13.0	102
30	46.1	92.2	138	184	230	276	323	369	415	7.3	35	13.1	103
31	47.6	95.2	143	190	238	286	334	381	429	7.4	36	13.2	105
32	49.2	98.3	147	197	246	295	344	393	442	7.5	37	13.3	106
33	50.7	101.3	152	203	253	304	354	405	456	7.6	38	13.4	108
34	52.2	104.4	157	209	261	313	364	418	470	7.8	39	13.5	109
35	53.8	107.5	161	215	269	323	376	430	484	7.9	40	13.6	111
36	55.3	110.5	166	221	277	332	387	442	498	8.0	41	13.7	112
37	56.8	113.7	170	227	284	341	398	456	512	8.1	42	13.8	114
38	58.4	116.7	175	233	292	349	409	467	525	8.2	43	13.9	115
39	59.9	119.8	180	240	300	359	419	479	539	8.3	44	14.0	117
40	61.4	122	184	246	307	368	430	492	553	8.4	45	14.1	119
41	63.0	125.1	189	252	315	378	441	504	567	8.5	46	14.2	120
42	64.5	128.2	194	258	323	387	452	516	581	8.6	47	14.3	122
43	66.0	131.3	198	264	330	396	462	528	594	8.7	48	14.4	124
44	67.6	134.4	203	270	338	405	473	541	608	8.8	49	14.5	125
45	69.1	137.5	207	276	346	415	484	553	622	8.9	50	14.6	127
46	70.7	140.5	212	282	353	424	495	565	636	9.0	51	14.7	129
47	72.2	143.7	217	288	361	433	506	578	650	9.1	52	14.8	130
48	73.7	146.8	221	294	369	442	518	590	664	9.2	53	14.9	132
49	75.3	149.8	226	301	376	452	527	602	677	9.3	54	15.0	134
50	76.8	152.9	230	307	384	462	538	614	691	9.4	55	15.1	135
51	78.4	155.9	235	313	392	471	548	627	705	9.5	56	15.2	137
52	79.9	159.0	240	319	400	481	559	639	719	9.6	57	15.3	139
53	81.5	162.0	244	325	407	490	569	651	733	9.7	58	15.4	141
54	83.0	165.1	249	331	415	500	579	664	747	9.8	59	15.5	142
55	84.6	168.1	253	337	424	510	590	677	761	9.9	60	15.6	144
56	86.1	171.2	258	343	432	520	602	688	774	10.0	61	15.7	146
57	87.7	174.2	263	349	440	530	613	700	788	10.1	62	15.8	148
58	89.2	177.3	267	355	448	540	624	713	802	10.2	63	15.9	150
59	90.8	180.3	272	361	456	550	634	725	816	10.3	64	16.0	151
60	92.2	184.4	276	369	464	560	645	737	829				

<sup>a</sup>For all distances under 10 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

1°.

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	92.2	184.3	276	369	461	553	645	737	829	16.1	153	22.1	285
1	93.7	187.4	281	375	468	562	656	750	843	16.2	155	22.2	287
2	95.2	190.5	286	381	476	571	667	762	857	16.3	157	22.3	290
3	96.8	193.5	290	387	484	581	677	774	871	16.4	159	22.4	293
4	98.3	196.6	295	393	492	590	688	786	885	16.5	161	22.5	295
5	99.8	199.7	300	399	499	599	699	799	899	16.6	163	22.6	298
6	101.4	202.8	304	406	507	608	710	811	912	16.7	165	22.7	300
7	102.9	205.8	309	412	515	618	720	823	926	16.8	167	22.8	303
8	104.4	208.9	313	418	522	627	731	836	940	16.9	168	22.9	306
9	106.0	212.0	318	424	530	636	742	848	954				
10	107.5	215.1	323	430	538	645	753	860	968	17.0	170	23.0	308
11	109.1	218.1	327	436	545	654	763	873	982	17.1	172	23.1	311
12	110.6	221.2	332	442	553	664	774	885	995	17.2	174	23.2	313
13	112.1	224.3	336	449	561	673	785	897	1,009	17.3	176	23.3	316
14	113.7	227.3	341	455	568	682	796	909	1,023	17.4	178	23.4	319
15	115.2	230.4	346	461	576	691	806	922	1,037	17.5	180	23.5	321
16	116.7	233.5	350	467	584	700	817	934	1,051	17.6	182	23.6	324
17	118.3	236.6	355	473	591	710	828	946	1,065	17.7	184	23.7	327
18	119.8	239.6	359	479	599	719	839	959	1,078	17.8	186	23.8	330
19	121.4	242.7	364	485	607	728	849	971	1,092	17.9	188	23.9	332
20	122.9	245.8	369	492	614	737	860	983	1,106	18.0	190	24.0	335
21	124.4	248.9	373	498	622	747	871	995	1,120	18.1	193	24.1	338
22	126.0	251.9	378	504	630	756	882	1,008	1,134	18.2	195	24.2	341
23	127.5	255.0	383	510	638	765	893	1,020	1,148	18.3	197	24.3	343
24	129.0	258.1	387	516	645	774	903	1,032	1,161	18.4	199	24.4	346
25	130.6	261.2	392	522	653	783	914	1,045	1,175	18.5	201	24.5	349
26	132.1	264.2	396	528	661	793	925	1,057	1,189	18.6	203	24.6	352
27	133.6	267.3	401	535	668	802	936	1,069	1,203	18.7	205	24.7	355
28	135.2	270.4	406	541	676	811	946	1,082	1,217	18.8	207	24.8	358
29	136.7	273.5	410	547	684	820	957	1,094	1,231	18.9	210	24.9	360
30	138.3	276.5	415	553	691	830	968	1,106	1,244	19.0	212	25.0	363
31	139.8	279.6	419	559	699	839	979	1,118	1,258	19.1	214	25.1	366
32	141.3	282.7	424	565	707	848	989	1,131	1,272	19.2	216	25.2	369
33	142.9	285.7	429	571	714	857	1,000	1,143	1,286	19.3	218	25.3	372
34	144.4	288.8	433	578	722	866	1,011	1,155	1,300	19.4	221	25.4	375
35	146.0	291.9	438	584	730	876	1,022	1,168	1,314	19.5	223	25.5	378
36	147.5	295.0	442	590	737	885	1,032	1,180	1,327	19.6	225	25.6	381
37	149.0	298.0	447	596	745	894	1,043	1,192	1,341	19.7	227	25.7	384
38	150.6	301.1	452	602	753	903	1,054	1,204	1,355	19.8	230	25.8	387
39	152.1	304.2	456	608	760	913	1,065	1,217	1,369	19.9	232	25.9	390
40	153.6	307.3	461	615	768	922	1,075	1,229	1,383	20.0	234	26.0	393
41	155.2	310.3	466	621	776	931	1,086	1,241	1,397	20.1	236	26.2	399
42	156.7	313.4	470	627	784	940	1,097	1,254	1,410	20.2	239	26.4	405
43	158.2	316.5	475	633	791	949	1,108	1,266	1,424	20.3	241	26.6	411
44	159.8	319.6	479	639	799	959	1,118	1,278	1,438	20.4	243	26.8	417
45	161.3	322.6	484	645	807	968	1,129	1,291	1,452	20.5	246	27.0	423
46	162.9	325.7	489	651	814	977	1,140	1,303	1,466	20.6	248	27.2	429
47	164.4	328.8	493	658	822	986	1,151	1,315	1,480	20.7	250	27.4	435
48	165.9	331.9	498	664	830	996	1,162	1,327	1,493	20.8	253	27.6	442
49	167.5	334.9	502	670	837	1,005	1,172	1,340	1,507	20.9	255	27.8	448
50	169.0	338.0	507	676	845	1,014	1,183	1,352	1,521	21.0	258	28.0	455
51	170.6	341.1	512	682	853	1,023	1,194	1,364	1,535	21.1	260	28.2	461
52	172.1	344.2	516	688	860	1,032	1,205	1,377	1,549	21.2	262	28.4	467
53	173.6	347.2	521	694	868	1,042	1,215	1,389	1,563	21.3	265	28.6	474
54	175.2	350.3	525	701	876	1,051	1,226	1,401	1,576	21.4	267	28.8	480
55	176.7	353.4	530	707	883	1,060	1,237	1,414	1,590	21.5	270	29.0	487
56	178.2	356.5	535	713	891	1,069	1,248	1,426	1,604	21.6	272	29.2	494
57	179.8	359.5	539	719	899	1,079	1,258	1,438	1,618	21.7	275	29.4	501
58	181.3	362.6	544	725	907	1,088	1,269	1,450	1,632	21.8	277	29.6	507
59	182.8	365.7	549	731	914	1,097	1,280	1,465	1,643	21.9	280	29.8	514
60	184.4	368.8	553	738	922	1,106	1,291	1,475	1,659	22.0	282	30.0	521

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

9°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument.*			
										Miles.	Feet.	Miles.	Feet.
0	184.4	368.8	553	738	923	1,108	1,291	1,475	1,659				
1	185.9	371.8	558	744	930	1,116	1,301	1,487	1,673	1.6	6	10.2	64
2	187.5	374.9	562	750	937	1,125	1,312	1,500	1,687	2.1	7	10.3	65
3	189.0	378.0	567	756	945	1,134	1,324	1,512	1,701	2.5	8	10.4	67
4	190.5	381.1	572	762	953	1,143	1,334	1,524	1,715	2.8	9	10.5	68
5	192.1	384.1	576	768	960	1,152	1,344	1,537	1,729	3.1	10	10.6	69
6	193.6	387.2	581	774	968	1,162	1,355	1,549	1,742	3.4	11	10.7	70
7	195.1	390.3	585	781	976	1,171	1,366	1,561	1,756	3.6	12	10.8	71
8	196.7	393.4	590	787	983	1,180	1,377	1,573	1,770	3.8	13	10.9	73
9	198.2	396.4	595	793	991	1,189	1,388	1,586	1,784				
10	199.8	399.5	599	799	999	1,199	1,398	1,598	1,798	4.1	14	11.0	74
11	201.3	402.6	604	806	1,006	1,208	1,409	1,610	1,812	4.3	15	11.1	76
12	202.8	405.7	609	811	1,014	1,217	1,420	1,623	1,826	4.5	16	11.2	77
13	204.4	408.8	613	818	1,022	1,226	1,431	1,636	1,839	4.7	17	11.3	78
14	205.9	411.8	618	824	1,030	1,235	1,441	1,647	1,853	4.8	18	11.4	79
15	207.5	414.9	622	830	1,037	1,245	1,452	1,660	1,867	5.0	19	11.5	80
16	209.0	418.0	627	836	1,045	1,254	1,463	1,672	1,881	5.2	20	11.6	82
17	210.5	421.1	632	842	1,053	1,263	1,474	1,684	1,895	5.4	21	11.7	83
18	212.1	424.1	636	848	1,060	1,272	1,484	1,697	1,909	5.5	22	11.8	84
19	213.6	427.2	641	854	1,068	1,282	1,496	1,709	1,922	5.7	23	11.9	85
20	215.1	430.3	646	861	1,076	1,291	1,506	1,721	1,936	5.8	24	12.0	87
21	216.7	433.4	650	867	1,083	1,300	1,517	1,733	1,950	6.0	25	12.1	89
22	218.2	436.4	655	873	1,091	1,309	1,528	1,746	1,964	6.1	26	12.2	90
23	219.8	439.5	659	879	1,099	1,319	1,538	1,758	1,978	6.3	27	12.3	91
24	221.3	442.6	664	885	1,106	1,328	1,549	1,770	1,992	6.4	28	12.4	93
25	222.8	445.7	669	891	1,114	1,337	1,560	1,783	2,006	6.6	29	12.5	94
26	224.4	448.7	673	897	1,122	1,346	1,571	1,795	2,019	6.7	30	12.6	96
27	225.9	451.8	678	904	1,130	1,355	1,581	1,807	2,033	6.8	31	12.7	97
28	227.5	454.9	682	910	1,137	1,365	1,592	1,820	2,047	6.9	32	12.8	99
29	229.0	458.0	687	916	1,145	1,374	1,603	1,832	2,061	7.0	33	12.9	100
30	230.5	461.1	692	922	1,153	1,383	1,614	1,844	2,075	7.2	34	13.0	102
31	232.1	464.1	696	928	1,160	1,392	1,624	1,857	2,089	7.3	35	13.1	103
32	233.6	467.2	701	934	1,168	1,402	1,635	1,869	2,102	7.4	36	13.2	105
33	235.1	470.3	705	941	1,176	1,411	1,646	1,881	2,116	7.5	37	13.3	106
34	236.7	473.4	711	947	1,183	1,420	1,657	1,893	2,130	7.6	38	13.4	108
35	238.2	476.4	715	953	1,191	1,429	1,668	1,906	2,144	7.8	39	13.5	109
36	239.8	479.5	719	959	1,199	1,439	1,678	1,918	2,158	7.9	40	13.6	111
37	241.3	482.6	724	965	1,207	1,448	1,689	1,930	2,172	8.0	41	13.7	112
38	242.8	485.7	729	971	1,214	1,457	1,700	1,943	2,186	8.1	42	13.8	114
39	244.4	488.8	733	978	1,222	1,466	1,711	1,956	2,199	8.2	43	13.9	115
40	245.9	491.8	738	984	1,230	1,476	1,721	1,967	2,213	8.3	44	14.0	117
41	247.5	494.9	742	990	1,237	1,485	1,732	1,980	2,227	8.4	45	14.1	119
42	249.0	497.0	747	996	1,245	1,494	1,743	1,992	2,241	8.5	46	14.2	120
43	250.5	501.1	752	1,002	1,253	1,503	1,754	2,004	2,255	8.6	47	14.3	122
44	252.1	504.2	756	1,008	1,260	1,512	1,765	2,017	2,269	8.7	48	14.4	124
45	253.6	507.2	761	1,014	1,268	1,522	1,775	2,029	2,283	8.8	49	14.5	125
46	255.2	510.3	765	1,021	1,276	1,531	1,786	2,041	2,296	8.9	50	14.6	127
47	256.7	513.4	770	1,027	1,283	1,540	1,797	2,054	2,310	9.0	51	14.7	129
48	258.2	516.5	775	1,033	1,291	1,549	1,808	2,066	2,324	9.1	52	14.8	130
49	259.8	519.5	779	1,039	1,299	1,559	1,818	2,078	2,338	9.2	53	14.9	132
50	261.3	522.6	784	1,045	1,307	1,568	1,829	2,091	2,352	9.3	54	15.0	134
51	262.9	525.7	789	1,051	1,314	1,577	1,840	2,103	2,366	9.4	55	15.1	135
52	264.4	528.8	793	1,056	1,322	1,586	1,851	2,115	2,380	9.5	56	15.2	137
53	265.9	531.9	798	1,064	1,330	1,596	1,862	2,127	2,393	9.6	57	15.3	139
54	267.5	534.9	802	1,070	1,337	1,606	1,872	2,140	2,407	9.7	58	15.4	141
55	269.0	538.0	807	1,076	1,345	1,614	1,883	2,152	2,421	9.8	59	15.5	142
56	270.6	541.1	812	1,082	1,353	1,624	1,894	2,164	2,435	9.9	60	15.6	144
57	272.1	544.1	816	1,088	1,360	1,633	1,905	2,177	2,449	10.0	61	15.7	146
58	273.6	547.2	821	1,095	1,368	1,642	1,915	2,189	2,463	10.1	62	15.8	148
59	275.2	550.3	826	1,101	1,376	1,651	1,926	2,201	2,477		63	15.9	150
60	276.7	553.4	830	1,107	1,384	1,660	1,937	2,214	2,490			16.0	151

\* For all distances under 1.6 miles the correction may be taken as +5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

3°.

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument.*	
0	276.7	553.4	830	1,107	1,384	1,660	1,937	2,214	2,490	Miles	Feet
1	278.3	556.5	835	1,113	1,391	1,670	1,948	2,226	2,504	10.1	63
2	279.8	559.6	839	1,119	1,399	1,679	1,959	2,238	2,518	10.2	64
3	281.3	562.7	844	1,125	1,407	1,688	1,969	2,251	2,532	10.3	65
4	282.9	565.7	849	1,131	1,414	1,697	1,980	2,263	2,546	10.4	67
5	284.4	568.8	853	1,138	1,422	1,706	1,991	2,275	2,560	10.5	68
6	286.0	571.9	858	1,144	1,430	1,716	2,002	2,288	2,574	10.6	69
7	287.5	575.0	862	1,150	1,437	1,725	2,012	2,300	2,587	10.7	70
8	289.0	578.1	867	1,156	1,445	1,734	2,023	2,312	2,601	10.8	71
9	290.6	581.2	872	1,162	1,453	1,743	2,034	2,325	2,615	10.9	73
10	292.1	584.2	876	1,168	1,461	1,753	2,045	2,337	2,629	11.0	75
11	293.7	587.3	881	1,175	1,469	1,762	2,056	2,349	2,643	11.2	77
12	295.2	590.4	886	1,181	1,476	1,771	2,066	2,362	2,657	11.4	79
13	296.7	593.5	890	1,187	1,484	1,780	2,077	2,373	2,671	11.6	82
14	298.3	596.6	895	1,193	1,491	1,789	2,088	2,386	2,685	11.8	84
15	299.8	599.6	899	1,199	1,499	1,799	2,099	2,399	2,698	12.0	87
16	301.4	602.7	904	1,205	1,507	1,808	2,110	2,411	2,712	12.2	90
17	302.9	605.8	909	1,212	1,515	1,817	2,120	2,423	2,726	12.4	93
18	304.4	608.9	913	1,218	1,522	1,827	2,131	2,436	2,740	12.6	96
19	306.0	612.0	918	1,224	1,530	1,836	2,142	2,448	2,754	12.8	99
20	307.5	615.0	923	1,230	1,538	1,845	2,153	2,460	2,768	13.0	102
21	309.1	618.1	927	1,236	1,545	1,854	2,163	2,473	2,782	13.2	105
22	310.6	621.2	932	1,242	1,553	1,864	2,174	2,485	2,795	13.4	108
23	312.1	624.3	936	1,249	1,561	1,873	2,185	2,497	2,809	13.6	111
24	313.7	627.4	941	1,255	1,568	1,882	2,196	2,510	2,823	13.8	114
25	315.2	630.5	946	1,261	1,576	1,891	2,207	2,522	2,837	14.0	117
26	316.8	633.5	950	1,267	1,584	1,901	2,217	2,534	2,851	14.2	120
27	318.3	636.6	955	1,273	1,592	1,910	2,228	2,547	2,865	14.4	124
28	319.9	639.7	960	1,279	1,599	1,919	2,240	2,559	2,879	14.6	127
29	321.4	642.7	964	1,286	1,607	1,928	2,250	2,571	2,893	14.8	130
30	322.9	645.9	969	1,292	1,615	1,938	2,261	2,584	2,906	15.0	132
31	324.5	649.0	973	1,298	1,622	1,947	2,271	2,596	2,920	15.2	137
32	326.0	652.0	978	1,304	1,630	1,956	2,282	2,608	2,934	15.4	141
33	327.6	655.1	983	1,310	1,638	1,965	2,293	2,621	2,948	15.6	144
34	329.1	658.2	987	1,316	1,646	1,975	2,304	2,633	2,962	15.8	148
35	330.6	661.3	992	1,323	1,653	1,984	2,315	2,645	2,976	16.0	151
36	332.2	664.4	997	1,329	1,661	1,993	2,325	2,658	2,990	16.2	153
37	333.7	667.5	1,001	1,335	1,669	2,002	2,336	2,670	3,004	16.4	156
38	335.3	670.5	1,006	1,341	1,676	2,012	2,347	2,682	3,017	16.6	158
39	336.8	673.6	1,010	1,347	1,684	2,021	2,358	2,695	3,031	16.8	167
40	338.4	676.7	1,015	1,353	1,692	2,030	2,369	2,707	3,045	17.0	170
41	339.9	679.8	1,020	1,360	1,700	2,039	2,379	2,719	3,059	17.2	174
42	341.4	682.9	1,024	1,366	1,707	2,049	2,390	2,732	3,073	17.4	178
43	343.0	686.0	1,029	1,372	1,715	2,058	2,401	2,744	3,087	17.6	182
44	344.5	689.1	1,034	1,378	1,723	2,067	2,412	2,756	3,101	17.8	186
45	346.1	692.1	1,038	1,384	1,730	2,076	2,422	2,769	3,115	18.0	190
46	347.6	695.2	1,043	1,390	1,738	2,086	2,433	2,781	3,129	18.2	193
47	349.2	698.3	1,047	1,397	1,746	2,095	2,444	2,793	3,142	18.4	199
48	350.7	701.4	1,052	1,403	1,753	2,104	2,455	2,806	3,156	18.6	203
49	352.2	704.5	1,057	1,409	1,761	2,113	2,466	2,818	3,170	18.8	207
50	353.8	707.6	1,061	1,415	1,769	2,123	2,476	2,830	3,184	19.0	212
51	355.3	710.7	1,066	1,421	1,777	2,132	2,487	2,843	3,198	19.2	216
52	356.9	713.7	1,071	1,427	1,784	2,141	2,498	2,855	3,212	19.4	221
53	358.4	716.8	1,075	1,434	1,792	2,150	2,509	2,867	3,226	19.6	225
54	360.0	719.9	1,080	1,440	1,800	2,160	2,520	2,880	3,240	19.8	230
55	361.5	723.0	1,085	1,446	1,807	2,169	2,530	2,892	3,253	20.0	234
56	363.0	726.1	1,089	1,452	1,815	2,178	2,541	2,904	3,267	21.0	238
57	364.6	729.2	1,094	1,458	1,823	2,188	2,552	2,917	3,281	22.0	242
58	366.1	732.3	1,098	1,465	1,831	2,197	2,563	2,929	3,295	23.0	246
59	367.7	735.3	1,103	1,471	1,838	2,206	2,574	2,941	3,309	24.0	250
60	369.2	738.4	1,108	1,477	1,846	2,215	2,584	2,954	3,323	25.0	253

\* For all distances under 1.6 miles the correction may be taken as +6 feet. Height of instrument assumed 4.5 feet.



TABLE 28.—For obtaining differences of altitude for any minute, etc.—Continued.

4°

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fath.	Miles.	Fath.
0	369.2	738	1,108	1,477	1,846	2,215	2,584	2,954	3,323				
1	370.8	742	1,112	1,483	1,854	2,225	2,595	2,966	3,337	1.6	6	10.2	64
2	372.3	745	1,117	1,489	1,862	2,234	2,604	2,978	3,351	1.7	7	10.3	65
3	373.8	748	1,122	1,496	1,869	2,243	2,617	2,991	3,365	1.8	8	10.4	66
4	375.4	751	1,126	1,502	1,877	2,252	2,628	3,003	3,379	1.9	9	10.5	67
5	376.9	754	1,131	1,508	1,885	2,262	2,639	3,015	3,392	2.0	10	10.6	68
6	378.5	757	1,135	1,514	1,892	2,271	2,649	3,028	3,406	2.1	11	10.7	69
7	380.0	760	1,140	1,520	1,900	2,280	2,660	3,040	3,420	2.2	12	10.8	70
8	381.6	763	1,145	1,526	1,908	2,289	2,671	3,053	3,434	2.3	13	10.9	71
9	383.1	766	1,149	1,532	1,916	2,299	2,682	3,065	3,448	2.4	14	11.0	72
10	384.7	769	1,154	1,539	1,923	2,308	2,693	3,077	3,462	2.5	15	11.1	73
11	386.2	772	1,159	1,545	1,931	2,317	2,703	3,090	3,476	2.6	16	11.2	74
12	387.7	775	1,163	1,551	1,939	2,326	2,714	3,102	3,490	2.7	17	11.3	75
13	389.3	779	1,168	1,557	1,946	2,336	2,725	3,114	3,504	2.8	18	11.4	76
14	390.8	782	1,172	1,563	1,954	2,345	2,736	3,127	3,517	2.9	19	11.5	77
15	392.4	786	1,177	1,569	1,962	2,354	2,747	3,139	3,531	3.0	20	11.6	78
16	393.9	788	1,182	1,576	1,970	2,363	2,757	3,151	3,545	3.1	21	11.7	79
17	395.5	791	1,186	1,582	1,977	2,373	2,768	3,164	3,559	3.2	22	11.8	80
18	397.0	794	1,191	1,588	1,985	2,382	2,779	3,176	3,573	3.3	23	11.9	81
19	398.6	797	1,196	1,594	1,993	2,391	2,790	3,188	3,587	3.4	24	12.0	82
20	400.1	800	1,200	1,600	2,000	2,401	2,801	3,201	3,601	3.5	25	12.1	83
21	401.6	803	1,205	1,607	2,008	2,410	2,811	3,213	3,615	3.6	26	12.2	84
22	403.2	806	1,210	1,613	2,016	2,419	2,822	3,225	3,629	3.7	27	12.3	85
23	404.7	809	1,214	1,619	2,024	2,428	2,833	3,238	3,643	3.8	28	12.4	86
24	406.3	813	1,219	1,625	2,031	2,438	2,844	3,250	3,656	3.9	29	12.5	87
25	407.8	816	1,223	1,631	2,039	2,447	2,855	3,263	3,670	4.0	30	12.6	88
26	409.4	819	1,228	1,637	2,047	2,456	2,866	3,275	3,684	4.1	31	12.7	89
27	410.9	822	1,233	1,644	2,055	2,465	2,876	3,287	3,698	4.2	32	12.8	90
28	412.5	825	1,237	1,650	2,062	2,475	2,887	3,300	3,712	4.3	33	12.9	91
29	414.0	828	1,242	1,656	2,070	2,484	2,898	3,312	3,726	4.4	34	13.0	92
30	415.5	831	1,247	1,662	2,078	2,493	2,909	3,324	3,740	4.5	35	13.1	93
31	417.1	834	1,251	1,668	2,086	2,503	2,920	3,337	3,754	4.6	36	13.2	94
32	418.6	837	1,256	1,675	2,093	2,512	2,930	3,349	3,768	4.7	37	13.3	95
33	420.2	840	1,261	1,681	2,101	2,521	2,941	3,361	3,782	4.8	38	13.4	96
34	421.7	843	1,265	1,687	2,109	2,530	2,952	3,374	3,796	4.9	39	13.5	97
35	423.3	847	1,270	1,693	2,116	2,540	2,963	3,386	3,809	5.0	40	13.6	98
36	424.8	850	1,274	1,699	2,124	2,549	2,974	3,399	3,823	5.1	41	13.7	99
37	426.4	853	1,279	1,705	2,132	2,558	2,985	3,411	3,837	5.2	42	13.8	100
38	427.9	856	1,284	1,712	2,140	2,567	2,996	3,423	3,851	5.3	43	13.9	101
39	429.5	859	1,288	1,718	2,147	2,577	3,006	3,436	3,865	5.4	44	14.0	102
40	431.0	862	1,293	1,724	2,155	2,586	3,017	3,448	3,879	5.5	45	14.1	103
41	432.5	865	1,298	1,730	2,163	2,595	3,028	3,460	3,893	5.6	46	14.2	104
42	434.1	868	1,302	1,736	2,170	2,605	3,039	3,473	3,907	5.7	47	14.3	105
43	435.6	871	1,307	1,743	2,178	2,614	3,049	3,485	3,921	5.8	48	14.4	106
44	437.2	874	1,312	1,749	2,186	2,623	3,060	3,498	3,935	5.9	49	14.5	107
45	438.7	877	1,316	1,755	2,194	2,632	3,071	3,510	3,949	6.0	50	14.6	108
46	440.3	881	1,321	1,761	2,201	2,642	3,082	3,522	3,963	6.1	51	14.7	109
47	441.8	884	1,325	1,767	2,209	2,651	3,093	3,535	3,976	6.2	52	14.8	110
48	443.4	887	1,330	1,773	2,217	2,660	3,104	3,547	3,990	6.3	53	14.9	111
49	444.9	890	1,335	1,780	2,225	2,669	3,113	3,558	4,003	6.4	54	15.0	112
50	446.5	893	1,339	1,786	2,232	2,679	3,125	3,572	4,018	6.5	55	15.1	113
51	448.0	896	1,344	1,792	2,240	2,688	3,136	3,584	4,032	6.6	56	15.2	114
52	449.6	899	1,349	1,798	2,248	2,697	3,147	3,596	4,046	6.7	57	15.3	115
53	451.1	902	1,353	1,804	2,256	2,707	3,158	3,609	4,060	6.8	58	15.4	116
54	452.7	905	1,358	1,811	2,263	2,716	3,169	3,621	4,074	6.9	59	15.5	117
55	454.2	908	1,363	1,817	2,271	2,725	3,179	3,634	4,088	7.0	60	15.6	118
56	455.8	912	1,367	1,823	2,279	2,735	3,190	3,646	4,102	7.1	61	15.7	119
57	457.3	915	1,372	1,829	2,286	2,744	3,201	3,658	4,116	7.2	62	15.8	120
58	458.8	918	1,377	1,835	2,294	2,753	3,212	3,671	4,130	7.3	63	15.9	121
59	460.4	921	1,381	1,842	2,302	2,762	3,223	3,683	4,144	7.4	64	16.0	122
60	461.9	924	1,386	1,848	2,310	2,772	3,234	3,696	4,157				

<sup>a</sup>For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

5°										Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
	1	2	3	4	5	6	7	8	9	Miles.	Fet.	Miles.	Fet.
0	461.9	924	1,386	1,848	2,310	2,772	3,234	3,696	4,157				
1	463.5	927	1,390	1,854	2,317	2,781	3,244	3,708	4,171	1.6	8	10.2	64
2	465.0	930	1,395	1,860	2,325	2,790	3,256	3,720	4,185	2.1	7	10.3	65
3	466.6	933	1,400	1,866	2,333	2,800	3,266	3,733	4,199	2.5	8	10.4	67
4	468.1	936	1,405	1,871	2,341	2,809	3,277	3,745	4,213	2.8	9	10.5	68
5	469.7	939	1,409	1,879	2,348	2,818	3,288	3,757	4,227	3.1	10	10.6	69
6	471.2	942	1,414	1,885	2,356	2,827	3,299	3,770	4,241	3.4	11	10.7	70
7	472.8	946	1,419	1,891	2,364	2,837	3,309	3,782	4,255	3.6	12	10.8	71
8	474.3	949	1,423	1,897	2,372	2,846	3,320	3,795	4,269	3.8	13	10.9	73
9	475.9	952	1,428	1,904	2,379	2,855	3,331	3,807	4,283				
10	477.4	955	1,432	1,910	2,387	2,865	3,342	3,819	4,297	4.1	14	11.0	74
11	479.0	958	1,437	1,916	2,395	2,874	3,353	3,832	4,311	4.3	15	11.1	75
12	480.5	961	1,442	1,922	2,403	2,883	3,361	3,844	4,325	4.5	16	11.2	77
13	482.1	964	1,447	1,928	2,410	2,892	3,375	3,857	4,339	4.7	17	11.3	78
14	483.6	967	1,451	1,935	2,418	2,902	3,385	3,869	4,353	4.9	18	11.4	79
15	485.2	970	1,456	1,941	2,426	2,911	3,396	3,881	4,367	5.0	19	11.5	80
16	486.7	973	1,461	1,947	2,434	2,920	3,407	3,894	4,381	5.2	20	11.6	82
17	488.3	976	1,465	1,953	2,441	2,930	3,418	3,906	4,394	5.4	21	11.7	83
18	489.8	980	1,470	1,959	2,449	2,939	3,429	3,919	4,408	5.5	22	11.8	84
19	491.3	983	1,475	1,966	2,457	2,948	3,440	3,931	4,422	5.7	23	11.9	86
20	492.9	986	1,479	1,972	2,465	2,958	3,450	3,943	4,436	5.8	24	12.0	87
21	494.5	989	1,483	1,978	2,472	2,967	3,461	3,956	4,450	6.0	25	12.1	89
22	496.0	992	1,488	1,984	2,480	2,976	3,472	3,968	4,464	6.1	26	12.2	90
23	497.6	995	1,493	1,990	2,488	2,985	3,483	3,981	4,478	6.3	27	12.3	91
24	499.1	998	1,498	1,996	2,496	2,995	3,494	3,993	4,492	6.4	28	12.4	93
25	500.7	1,001	1,502	2,003	2,503	3,004	3,505	4,005	4,506	6.5	29	12.5	94
26	502.2	1,004	1,507	2,009	2,511	3,013	3,515	4,018	4,520	6.7	30	12.6	96
27	503.8	1,007	1,512	2,015	2,519	3,023	3,526	4,030	4,534	6.8	31	12.7	97
28	505.3	1,010	1,516	2,021	2,527	3,032	3,537	4,042	4,548	6.9	32	12.8	99
29	506.9	1,014	1,521	2,027	2,534	3,041	3,548	4,055	4,562	7.0	33	12.9	100
30	508.4	1,017	1,525	2,034	2,542	3,050	3,559	4,067	4,576	7.2	34	13.0	102
31	510.0	1,020	1,530	2,040	2,550	3,060	3,570	4,080	4,590	7.3	35	13.1	103
32	511.5	1,023	1,535	2,046	2,558	3,069	3,581	4,092	4,604	7.4	36	13.2	105
33	513.0	1,026	1,539	2,052	2,565	3,078	3,591	4,105	4,618	7.5	37	13.3	106
34	514.6	1,029	1,544	2,058	2,573	3,088	3,602	4,117	4,632	7.6	38	13.4	108
35	516.2	1,032	1,549	2,065	2,581	3,097	3,613	4,129	4,645	7.8	39	13.5	109
36	517.7	1,035	1,553	2,071	2,589	3,106	3,624	4,142	4,659	7.9	40	13.6	111
37	519.3	1,039	1,558	2,077	2,596	3,116	3,635	4,154	4,673	8.0	41	13.7	112
38	520.8	1,042	1,563	2,083	2,604	3,125	3,646	4,167	4,687	8.1	42	13.8	114
39	522.4	1,045	1,568	2,089	2,612	3,134	3,657	4,179	4,701	8.2	43	13.9	115
40	523.9	1,048	1,572	2,096	2,620	3,144	3,667	4,191	4,715	8.3	44	14.0	117
41	525.5	1,051	1,576	2,102	2,627	3,153	3,678	4,204	4,729	8.4	45	14.1	119
42	527.0	1,054	1,581	2,108	2,635	3,162	3,689	4,216	4,743	8.5	46	14.2	120
43	528.6	1,057	1,586	2,114	2,643	3,172	3,700	4,229	4,757	8.6	47	14.3	122
44	530.1	1,060	1,591	2,121	2,651	3,181	3,711	4,241	4,771	8.7	48	14.4	124
45	531.7	1,063	1,595	2,127	2,658	3,190	3,722	4,253	4,785	8.8	49	14.5	125
46	533.2	1,066	1,600	2,133	2,666	3,199	3,733	4,266	4,799	8.9	50	14.6	127
47	534.8	1,070	1,605	2,139	2,674	3,209	3,743	4,278	4,813	9.0	51	14.7	129
48	536.3	1,073	1,609	2,145	2,682	3,218	3,754	4,291	4,827	9.1	52	14.8	130
49	537.9	1,076	1,614	2,151	2,690	3,227	3,765	4,303	4,841	9.2	53	14.9	132
50	539.4	1,079	1,618	2,158	2,697	3,237	3,776	4,315	4,855	9.3	54	15.0	134
51	541.0	1,082	1,623	2,166	2,705	3,246	3,787	4,328	4,869	9.4	55	15.1	135
52	542.5	1,085	1,628	2,170	2,713	3,255	3,798	4,340	4,883	9.5	56	15.2	137
53	544.1	1,088	1,632	2,176	2,721	3,265	3,809	4,353	4,897	9.6	57	15.3	139
54	545.6	1,091	1,637	2,183	2,729	3,274	3,819	4,365	4,911	9.7	58	15.4	141
55	547.2	1,094	1,642	2,189	2,736	3,283	3,830	4,378	4,925	9.8	59	15.5	142
56	548.7	1,097	1,646	2,195	2,743	3,292	3,841	4,390	4,939	9.9	60	15.6	144
57	550.3	1,101	1,651	2,201	2,752	3,302	3,852	4,402	4,953	10.0	61	15.7	146
58	551.8	1,104	1,656	2,207	2,759	3,311	3,863	4,415	4,967	10.1	62	15.8	148
59	553.4	1,107	1,661	2,214	2,767	3,320	3,874	4,427	4,981		63	15.9	150
60	555.0	1,110	1,665	2,220	2,775	3,330	3,885	4,440	4,995			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 6 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

6°

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction and height of instrument. <sup>a</sup>			
										<i>Miles.</i>	<i>Fet.</i>	<i>Miles.</i>	<i>Fet.</i>
0	555.0	1.110	1.665	2.220	2.775	3.330	3.885	4.440	4.995				
1	556.5	1.113	1.670	2.226	2.783	3.339	3.896	4.452	5.009	1.6	6	10.2	64
2	558.1	1.116	1.674	2.232	2.790	3.348	3.906	4.464	5.023	2.1	7	10.3	65
3	559.6	1.119	1.679	2.238	2.798	3.358	3.917	4.477	5.037	2.5	8	10.4	67
4	561.2	1.122	1.684	2.245	2.806	3.367	3.928	4.489	5.050	2.8	9	10.5	68
5	562.7	1.125	1.688	2.251	2.814	3.376	3.939	4.502	5.064	3.1	10	10.6	69
6	564.3	1.129	1.693	2.257	2.821	3.386	3.950	4.514	5.078	3.4	11	10.7	70
7	565.8	1.132	1.697	2.263	2.829	3.395	3.961	4.527	5.092	3.6	12	10.8	71
8	567.4	1.135	1.702	2.270	2.837	3.404	3.972	4.539	5.106	3.8	13	10.9	73
9	568.9	1.138	1.707	2.276	2.845	3.414	3.983	4.551	5.120				
10	570.5	1.141	1.711	2.282	2.852	3.423	3.993	4.564	5.134	4.1	14	11.0	74
11	572.0	1.144	1.716	2.288	2.860	3.432	4.004	4.576	5.148	4.3	15	11.1	75
12	573.6	1.147	1.721	2.294	2.868	3.442	4.015	4.589	5.162	4.5	16	11.2	77
13	575.2	1.150	1.725	2.301	2.876	3.451	4.026	4.601	5.176	4.7	17	11.3	78
14	576.7	1.153	1.730	2.307	2.884	3.460	4.037	4.614	5.190	4.8	18	11.4	79
15	578.3	1.157	1.735	2.313	2.891	3.470	4.048	4.626	5.204	5.0	19	11.5	80
16	579.8	1.160	1.739	2.319	2.899	3.479	4.059	4.639	5.218	5.2	20	11.6	82
17	581.4	1.163	1.744	2.325	2.907	3.488	4.070	4.651	5.232	5.4	21	11.7	83
18	582.9	1.166	1.749	2.332	2.915	3.498	4.080	4.663	5.246	5.5	22	11.8	84
19	584.5	1.169	1.753	2.338	2.922	3.507	4.091	4.676	5.260	5.7	23	11.9	86
20	586.0	1.172	1.758	2.344	2.930	3.516	4.102	4.688	5.274	5.8	24	12.0	87
21	587.6	1.175	1.763	2.350	2.938	3.525	4.113	4.701	5.288	6.0	25	12.1	89
22	589.1	1.178	1.767	2.357	2.946	3.535	4.124	4.713	5.302	6.1	26	12.2	90
23	590.7	1.181	1.772	2.363	2.953	3.544	4.135	4.726	5.316	6.3	27	12.3	91
24	592.2	1.185	1.777	2.369	2.961	3.554	4.146	4.738	5.330	6.4	28	12.4	93
25	593.8	1.188	1.781	2.375	2.969	3.563	4.157	4.750	5.344	6.5	29	12.5	94
26	595.4	1.191	1.786	2.381	2.977	3.572	4.168	4.763	5.358	6.7	30	12.6	96
27	596.9	1.194	1.791	2.388	2.985	3.581	4.178	4.775	5.372	6.8	31	12.7	97
28	598.5	1.197	1.795	2.394	2.992	3.591	4.189	4.788	5.386	6.9	32	12.8	99
29	600.0	1.200	1.800	2.400	3.000	3.600	4.200	4.800	5.400	7.0	33	12.9	100
30	601.6	1.203	1.805	2.406	3.008	3.609	4.211	4.813	5.414	7.2	34	13.0	102
31	603.1	1.206	1.809	2.413	3.016	3.619	4.222	4.825	5.428	7.3	35	13.1	103
32	604.7	1.209	1.814	2.419	3.025	3.628	4.233	4.838	5.442	7.4	36	13.2	105
33	606.3	1.213	1.819	2.425	3.033	3.637	4.244	4.850	5.456	7.5	37	13.3	106
34	607.8	1.216	1.823	2.431	3.041	3.647	4.255	4.862	5.470	7.6	38	13.4	108
35	609.4	1.219	1.828	2.437	3.049	3.656	4.266	4.875	5.484	7.8	39	13.5	109
36	610.9	1.222	1.833	2.443	3.057	3.666	4.277	4.887	5.498	7.9	40	13.6	111
37	612.5	1.225	1.837	2.450	3.065	3.675	4.287	4.900	5.512	8.0	41	13.7	112
38	614.0	1.228	1.842	2.456	3.073	3.684	4.298	4.912	5.526	8.1	42	13.8	114
39	615.5	1.231	1.847	2.462	3.081	3.694	4.309	4.925	5.540	8.2	43	13.9	115
40	617.2	1.234	1.851	2.469	3.089	3.703	4.320	4.937	5.554	8.3	44	14.0	117
41	618.7	1.237	1.856	2.475	3.097	3.712	4.331	4.950	5.568	8.4	45	14.1	119
42	620.3	1.241	1.860	2.481	3.105	3.722	4.342	4.962	5.582	8.5	46	14.2	120
43	621.8	1.244	1.865	2.487	3.113	3.731	4.353	4.975	5.596	8.6	47	14.3	122
44	623.4	1.247	1.870	2.494	3.121	3.740	4.364	4.987	5.610	8.7	48	14.4	124
45	624.9	1.250	1.875	2.500	3.129	3.750	4.375	4.999	5.624	8.8	49	14.5	125
46	626.5	1.253	1.879	2.506	3.137	3.759	4.386	5.012	5.638	8.9	50	14.6	127
47	628.0	1.256	1.884	2.512	3.145	3.768	4.396	5.024	5.653	9.0	51	14.7	129
48	629.6	1.259	1.889	2.518	3.153	3.778	4.407	5.037	5.667	9.1	52	14.8	130
49	631.1	1.262	1.894	2.525	3.161	3.787	4.418	5.049	5.681	9.2	53	14.9	132
50	632.7	1.265	1.898	2.531	3.169	3.796	4.429	5.062	5.695	9.3	54	15.0	134
51	634.3	1.269	1.903	2.537	3.177	3.806	4.440	5.074	5.709	9.4	55	15.1	135
52	635.8	1.272	1.908	2.543	3.185	3.815	4.451	5.087	5.723	9.5	56	15.2	137
53	637.4	1.275	1.913	2.550	3.193	3.824	4.462	5.099	5.737	9.6	57	15.3	139
54	638.9	1.278	1.917	2.556	3.201	3.834	4.473	5.112	5.751	9.7	58	15.4	141
55	640.5	1.281	1.922	2.562	3.209	3.843	4.484	5.124	5.765	9.8	59	15.5	142
56	642.1	1.284	1.926	2.568	3.217	3.852	4.495	5.136	5.779	9.9	60	15.6	144
57	643.6	1.287	1.931	2.574	3.225	3.862	4.506	5.149	5.793	10.0	61	15.7	146
58	645.2	1.290	1.936	2.580	3.233	3.871	4.516	5.161	5.807	10.1	62	15.8	148
59	646.7	1.293	1.940	2.586	3.241	3.880	4.527	5.174	5.821		63	15.9	150
60	648.3	1.297	1.945	2.592	3.249	3.890	4.538	5.186	5.835		64	16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 6 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

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	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction and height of instrument, <sup>a</sup>			
										Miles.	Feet	Miles.	Feet
0	648.3	1,297	1,945	2,593	3,242	3,890	4,538	5,186	5,835				
1	649.9	1,300	1,950	2,599	3,249	3,899	4,549	5,199	5,849	1.6	6	10.2	64
2	651.4	1,303	1,954	2,606	3,257	3,909	4,560	5,211	5,863	2.1	7	10.3	65
3	653.0	1,306	1,959	2,612	3,265	3,918	4,571	5,224	5,877	2.6	8	10.4	67
4	654.5	1,309	1,964	2,618	3,273	3,927	4,582	5,236	5,891	2.8	9	10.5	68
5	656.1	1,312	1,968	2,624	3,281	3,937	4,593	5,249	5,906	3.1	10	10.6	69
6	657.7	1,315	1,973	2,631	3,288	3,946	4,604	5,261	5,919	3.4	11	10.7	70
7	659.2	1,318	1,978	2,637	3,296	3,955	4,615	5,274	5,933	3.6	12	10.8	71
8	660.8	1,322	1,982	2,643	3,304	3,965	4,626	5,286	5,947	3.8	13	10.9	73
9	662.4	1,325	1,987	2,649	3,312	3,974	4,636	5,299	5,961				
10	663.9	1,328	1,992	2,656	3,320	3,983	4,647	5,311	5,975	4.1	14	11.0	74
11	665.5	1,331	1,996	2,662	3,327	3,993	4,658	5,324	5,989	4.3	15	11.1	75
12	667.0	1,334	2,001	2,668	3,335	4,002	4,669	5,336	6,003	4.5	16	11.2	77
13	668.6	1,337	2,006	2,674	3,343	4,012	4,680	5,349	6,017	4.7	17	11.3	78
14	670.2	1,340	2,010	2,681	3,351	4,021	4,691	5,361	6,031	4.8	18	11.4	79
15	671.7	1,343	2,015	2,687	3,359	4,030	4,702	5,374	6,045	5.0	19	11.5	80
16	673.3	1,347	2,020	2,693	3,366	4,040	4,713	5,386	6,060	5.2	20	11.6	82
17	674.8	1,350	2,025	2,699	3,374	4,049	4,724	5,399	6,074	5.4	21	11.7	83
18	676.4	1,353	2,029	2,706	3,382	4,058	4,735	5,411	6,088	5.5	22	11.8	84
19	678.0	1,356	2,034	2,712	3,390	4,068	4,746	5,424	6,102	5.7	23	11.9	86
20	679.5	1,359	2,039	2,718	3,398	4,077	4,757	5,436	6,116	5.8	24	12.0	87
21	681.1	1,362	2,043	2,724	3,405	4,087	4,768	5,449	6,130	6.0	25	12.1	89
22	682.6	1,365	2,048	2,731	3,413	4,096	4,779	5,461	6,144	6.1	26	12.2	90
23	684.2	1,368	2,053	2,737	3,421	4,105	4,790	5,474	6,158	6.3	27	12.3	91
24	685.8	1,372	2,057	2,743	3,429	4,115	4,800	5,486	6,172	6.4	28	12.4	93
25	687.3	1,375	2,062	2,749	3,437	4,124	4,811	5,499	6,186	6.5	29	12.5	94
26	688.9	1,378	2,067	2,756	3,444	4,133	4,822	5,511	6,200	6.7	30	12.6	96
27	690.5	1,381	2,071	2,762	3,452	4,144	4,833	5,524	6,214	6.8	31	12.7	97
28	692.0	1,384	2,076	2,768	3,460	4,152	4,844	5,536	6,228	6.9	32	12.8	99
29	693.6	1,387	2,081	2,774	3,468	4,161	4,855	5,549	6,242	7.0	33	12.9	100
30	695.1	1,390	2,085	2,781	3,476	4,171	4,866	5,561	6,256	7.2	34	13.0	102
31	696.7	1,393	2,090	2,787	3,483	4,180	4,877	5,574	6,270	7.3	35	13.1	103
32	698.3	1,396	2,095	2,793	3,491	4,190	4,888	5,586	6,284	7.4	36	13.2	105
33	699.8	1,400	2,099	2,799	3,499	4,199	4,899	5,599	6,298	7.5	37	13.3	106
34	701.4	1,403	2,104	2,806	3,507	4,208	4,910	5,611	6,312	7.6	38	13.4	108
35	702.9	1,406	2,109	2,812	3,515	4,218	4,921	5,624	6,327	7.8	39	13.5	109
36	704.5	1,409	2,114	2,818	3,523	4,227	4,932	5,636	6,341	7.9	40	13.6	111
37	706.1	1,412	2,118	2,824	3,530	4,236	4,943	5,649	6,355	8.0	41	13.7	112
38	707.6	1,415	2,123	2,831	3,538	4,246	4,953	5,661	6,369	8.1	42	13.8	114
39	709.2	1,418	2,128	2,837	3,546	4,255	4,964	5,674	6,383	8.2	43	13.9	115
40	710.8	1,422	2,132	2,843	3,554	4,265	4,975	5,686	6,397	8.3	44	14.0	117
41	712.3	1,425	2,137	2,849	3,562	4,274	4,986	5,699	6,411	8.4	45	14.1	119
42	713.9	1,428	2,142	2,856	3,569	4,283	4,997	5,711	6,425	8.5	46	14.2	120
43	715.5	1,431	2,146	2,862	3,577	4,293	5,008	5,724	6,439	8.6	47	14.3	122
44	717.0	1,434	2,151	2,868	3,585	4,302	5,019	5,736	6,453	8.7	48	14.4	124
45	718.6	1,437	2,156	2,874	3,593	4,312	5,030	5,749	6,467	8.8	49	14.5	125
46	720.2	1,440	2,160	2,881	3,601	4,321	5,041	5,761	6,481	8.9	50	14.6	127
47	721.7	1,443	2,165	2,887	3,609	4,330	5,052	5,774	6,495	9.0	51	14.7	129
48	723.3	1,447	2,170	2,893	3,616	4,340	5,063	5,786	6,510	9.1	52	14.8	130
49	724.8	1,450	2,175	2,899	3,624	4,349	5,074	5,799	6,524	9.2	53	14.9	132
50	726.4	1,453	2,179	2,906	3,632	4,358	5,085	5,811	6,538	9.3	54	15.0	134
51	728.0	1,456	2,184	2,912	3,640	4,368	5,096	5,824	6,552	9.4	55	15.1	135
52	729.5	1,459	2,189	2,918	3,648	4,377	5,107	5,836	6,566	9.5	56	15.2	137
53	731.1	1,462	2,193	2,924	3,656	4,387	5,118	5,849	6,580	9.6	57	15.3	139
54	732.7	1,465	2,198	2,931	3,663	4,396	5,129	5,861	6,594	9.7	58	15.4	141
55	734.2	1,468	2,203	2,937	3,671	4,405	5,140	5,874	6,608	9.8	59	15.5	142
56	735.8	1,472	2,207	2,943	3,679	4,415	5,151	5,886	6,622	9.9	60	15.6	144
57	737.4	1,475	2,212	2,949	3,687	4,424	5,162	5,899	6,636	10.0	61	15.7	146
58	738.9	1,478	2,217	2,956	3,695	4,434	5,172	5,911	6,650	10.1	62	15.8	148
59	740.5	1,481	2,221	2,962	3,702	4,443	5,183	5,924	6,664		63	15.9	150
60	742.1	1,484	2,226	2,968	3,710	4,452	5,194	5,936	6,678			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

8°

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	742.1	1,484	2,226	2,968	3,710	4,452	5,194	5,936	6,678				
1	743.6	1,487	2,231	2,974	3,718	4,462	5,205	5,949	6,693				
2	745.2	1,490	2,236	2,981	3,726	4,471	5,216	5,962	6,707	1.6	6	10.2	64
3	746.8	1,494	2,240	2,987	3,734	4,481	5,227	5,974	6,721	2.1	7	10.3	65
4	748.3	1,497	2,245	2,993	3,742	4,490	5,238	5,987	6,735	2.5	8	10.4	67
5	749.9	1,500	2,250	3,000	3,749	4,499	5,249	5,999	6,749	2.8	9	10.5	68
6	751.5	1,503	2,254	3,006	3,757	4,509	5,260	6,012	6,763	3.1	10	10.6	69
7	753.0	1,506	2,259	3,012	3,765	4,518	5,271	6,021	6,777	3.4	11	10.7	70
8	754.6	1,509	2,264	3,018	3,773	4,528	5,282	6,037	6,791	3.6	12	10.8	71
9	756.2	1,512	2,269	3,025	3,781	4,537	5,293	6,049	6,806	3.8	13	10.9	73
10	757.7	1,515	2,273	3,031	3,789	4,546	5,304	6,062	6,820	4.1	14	11.0	74
11	759.3	1,519	2,278	3,037	3,797	4,556	5,315	6,074	6,834	4.3	15	11.1	75
12	760.9	1,522	2,283	3,043	3,804	4,565	5,326	6,087	6,848	4.5	16	11.2	77
13	762.4	1,525	2,287	3,050	3,812	4,575	5,337	6,100	6,862	4.7	17	11.3	78
14	764.0	1,528	2,292	3,056	3,820	4,584	5,348	6,112	6,876	4.8	18	11.4	79
15	765.6	1,531	2,297	3,062	3,828	4,593	5,359	6,125	6,890	5.0	19	11.5	80
16	767.1	1,534	2,301	3,069	3,836	4,603	5,370	6,137	6,904	5.2	20	11.6	82
17	768.7	1,537	2,306	3,075	3,844	4,612	5,381	6,150	6,918	5.4	21	11.7	83
18	770.3	1,541	2,311	3,081	3,851	4,622	5,392	6,162	6,933	5.5	22	11.8	84
19	771.8	1,544	2,316	3,087	3,859	4,631	5,403	6,175	6,947	5.7	23	11.9	86
20	773.4	1,547	2,320	3,094	3,867	4,640	5,414	6,187	6,961	5.8	24	12.0	87
21	775.0	1,550	2,325	3,100	3,875	4,650	5,425	6,200	6,975	6.0	25	12.1	89
22	776.6	1,553	2,330	3,106	3,883	4,659	5,436	6,212	6,989	6.1	26	12.2	90
23	778.1	1,556	2,334	3,112	3,891	4,669	5,447	6,225	7,003	6.3	27	12.3	91
24	779.7	1,559	2,339	3,119	3,898	4,678	5,458	6,237	7,017	6.4	28	12.4	93
25	781.3	1,562	2,344	3,125	3,906	4,688	5,469	6,250	7,031	6.5	29	12.5	94
26	782.8	1,566	2,348	3,131	3,914	4,697	5,480	6,263	7,045	6.7	30	12.6	96
27	784.4	1,569	2,353	3,138	3,922	4,706	5,491	6,275	7,060	6.8	31	12.7	97
28	786.0	1,572	2,358	3,144	3,930	4,716	5,502	6,288	7,074	6.9	32	12.8	99
29	787.5	1,575	2,363	3,150	3,938	4,725	5,513	6,300	7,088	7.0	33	12.9	100
30	789.1	1,578	2,367	3,156	3,945	4,735	5,524	6,313	7,102	7.2	34	13.0	102
31	790.7	1,581	2,372	3,163	3,953	4,744	5,535	6,325	7,116	7.3	35	13.1	103
32	792.2	1,584	2,377	3,169	3,961	4,753	5,546	6,338	7,130	7.4	36	13.2	105
33	793.8	1,588	2,381	3,175	3,969	4,763	5,557	6,351	7,144	7.5	37	13.3	106
34	795.4	1,591	2,386	3,182	3,977	4,772	5,568	6,363	7,159	7.6	38	13.4	108
35	796.9	1,594	2,391	3,188	3,985	4,782	5,579	6,376	7,173	7.8	39	13.5	109
36	798.5	1,597	2,396	3,194	3,993	4,791	5,590	6,388	7,187	7.9	40	13.6	111
37	800.1	1,600	2,400	3,200	4,001	4,801	5,601	6,401	7,201	8.0	41	13.7	112
38	801.7	1,603	2,405	3,207	4,008	4,810	5,612	6,414	7,215	8.1	42	13.8	114
39	803.2	1,607	2,410	3,213	4,016	4,820	5,623	6,426	7,229	8.2	43	13.9	115
40	804.8	1,610	2,414	3,219	4,024	4,829	5,634	6,439	7,243	8.3	44	14.0	117
41	806.4	1,613	2,419	3,226	4,032	4,838	5,645	6,451	7,258	8.4	45	14.1	119
42	808.0	1,616	2,424	3,232	4,040	4,848	5,656	6,464	7,272	8.5	46	14.2	120
43	809.5	1,619	2,429	3,238	4,048	4,857	5,667	6,476	7,286	8.6	47	14.3	122
44	811.1	1,622	2,433	3,244	4,056	4,867	5,678	6,489	7,300	8.7	48	14.4	124
45	812.7	1,625	2,438	3,251	4,063	4,876	5,689	6,501	7,314	8.8	49	14.5	125
46	814.2	1,628	2,443	3,257	4,071	4,886	5,700	6,514	7,328	8.9	50	14.6	127
47	815.8	1,632	2,447	3,263	4,079	4,895	5,711	6,527	7,342	9.0	51	14.7	129
48	817.4	1,635	2,452	3,270	4,087	4,904	5,722	6,539	7,357	9.1	52	14.8	130
49	819.0	1,638	2,457	3,276	4,095	4,914	5,733	6,552	7,371	9.2	53	14.9	132
50	820.5	1,641	2,462	3,282	4,103	4,923	5,744	6,564	7,385	9.3	54	15.0	134
51	822.1	1,644	2,466	3,288	4,111	4,933	5,755	6,577	7,399	9.4	55	15.1	135
52	823.7	1,647	2,471	3,295	4,118	4,942	5,766	6,590	7,413	9.5	56	15.2	137
53	825.3	1,651	2,476	3,301	4,126	4,952	5,777	6,602	7,427	9.6	58	15.3	139
54	826.8	1,654	2,481	3,307	4,134	4,961	5,788	6,615	7,442	9.7	59	15.4	141
55	828.4	1,657	2,485	3,314	4,142	4,970	5,799	6,627	7,456	9.8	60	15.5	142
56	830.0	1,660	2,490	3,320	4,150	4,980	5,810	6,640	7,470	9.9	61	15.6	144
57	831.5	1,663	2,495	3,326	4,158	4,989	5,821	6,652	7,484	10.0	62	15.7	146
58	833.1	1,666	2,499	3,332	4,166	4,999	5,832	6,665	7,498	10.1	63	15.8	148
59	834.7	1,669	2,504	3,339	4,173	5,008	5,843	6,678	7,512			15.9	150
60	836.3	1,673	2,509	3,345	4,181	5,018	5,854	6,690	7,526			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

9°

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Fect.	Miles.	Fect.
0	836.3	1,673	2,509	3,345	4,181	5,018	5,854	6,690	7,526				
1	837.8	1,676	2,514	3,351	4,189	5,027	5,865	6,703	7,541	1.6	6	10.2	64
2	839.4	1,679	2,518	3,358	4,197	5,037	5,876	6,715	7,555	2.1	7	10.3	65
3	841.0	1,682	2,523	3,364	4,205	5,046	5,887	6,728	7,569	2.5	8	10.4	67
4	842.6	1,685	2,528	3,370	4,213	5,055	5,898	6,741	7,583	2.8	9	10.5	68
5	844.2	1,688	2,532	3,377	4,221	5,065	5,909	6,753	7,597	3.1	10	10.6	69
6	845.7	1,691	2,537	3,383	4,229	5,074	5,920	6,766	7,612	3.4	11	10.7	70
7	847.3	1,695	2,542	3,389	4,237	5,084	5,931	6,778	7,626	3.6	12	10.8	71
8	848.9	1,698	2,547	3,396	4,244	5,093	5,942	6,791	7,640	3.8	13	10.9	73
9	850.5	1,701	2,551	3,402	4,252	5,103	5,953	6,804	7,654				
10	852.0	1,704	2,556	3,408	4,260	5,112	5,964	6,816	7,668	4.1	14	11.0	74
11	853.6	1,707	2,561	3,414	4,268	5,122	5,975	6,829	7,683	4.3	15	11.1	75
12	855.2	1,710	2,566	3,421	4,276	5,131	5,986	6,842	7,697	4.5	16	11.2	77
13	856.8	1,714	2,570	3,427	4,284	5,141	5,997	6,854	7,711	4.7	17	11.3	78
14	858.3	1,717	2,575	3,433	4,292	5,150	6,008	6,867	7,725	4.8	18	11.4	79
15	859.9	1,720	2,580	3,440	4,300	5,160	6,020	6,879	7,739	5.0	19	11.5	80
16	861.5	1,723	2,585	3,446	4,308	5,169	6,031	6,892	7,754	5.2	20	11.6	82
17	863.1	1,726	2,589	3,452	4,315	5,179	6,042	6,905	7,768	5.4	21	11.7	83
18	864.7	1,729	2,594	3,459	4,323	5,188	6,053	6,917	7,782	5.5	22	11.8	84
19	866.2	1,732	2,599	3,465	4,331	5,197	6,064	6,930	7,796	5.7	23	11.9	86
20	867.8	1,736	2,603	3,471	4,339	5,207	6,075	6,943	7,810	5.8	24	12.0	87
21	869.4	1,739	2,608	3,478	4,347	5,216	6,086	6,955	7,825	6.0	25	12.1	89
22	871.0	1,742	2,613	3,484	4,355	5,226	6,097	6,968	7,839	6.1	26	12.2	90
23	872.5	1,745	2,618	3,490	4,363	5,235	6,108	6,980	7,853	6.3	27	12.3	91
24	874.1	1,748	2,622	3,496	4,371	5,245	6,119	6,993	7,867	6.4	28	12.4	93
25	875.7	1,751	2,627	3,503	4,379	5,254	6,130	7,006	7,881	6.5	29	12.5	94
26	877.3	1,755	2,632	3,509	4,386	5,264	6,141	7,018	7,896	6.7	30	12.6	96
27	878.8	1,758	2,637	3,515	4,394	5,273	6,152	7,031	7,910	6.8	31	12.7	97
28	880.4	1,761	2,641	3,522	4,402	5,283	6,163	7,043	7,924	6.9	32	12.8	99
29	882.0	1,764	2,646	3,528	4,410	5,292	6,174	7,056	7,938	7.0	33	12.9	100
30	883.6	1,767	2,651	3,534	4,418	5,302	6,185	7,068	7,952	7.2	34	13.0	102
31	885.2	1,770	2,656	3,541	4,426	5,311	6,196	7,081	7,967	7.3	35	13.1	103
32	886.7	1,774	2,660	3,547	4,434	5,320	6,207	7,094	7,981	7.4	36	13.2	105
33	888.3	1,777	2,665	3,553	4,442	5,330	6,218	7,107	7,995	7.5	37	13.3	106
34	889.9	1,780	2,670	3,560	4,450	5,339	6,229	7,119	8,009	7.6	38	13.4	108
35	891.5	1,783	2,674	3,566	4,457	5,349	6,240	7,132	8,023	7.8	39	13.5	109
36	893.1	1,786	2,679	3,572	4,465	5,358	6,252	7,145	8,038	7.9	40	13.6	111
37	894.6	1,789	2,684	3,579	4,473	5,368	6,263	7,157	8,052	8.0	41	13.7	112
38	896.2	1,792	2,689	3,585	4,481	5,377	6,274	7,170	8,066	8.1	42	13.8	114
39	897.8	1,796	2,693	3,591	4,489	5,387	6,285	7,183	8,080	8.2	43	13.9	115
40	899.4	1,799	2,698	3,598	4,497	5,396	6,296	7,195	8,095	8.3	44	14.0	117
41	901.0	1,802	2,703	3,604	4,505	5,406	6,307	7,208	8,109	8.4	45	14.1	119
42	902.5	1,805	2,708	3,610	4,513	5,415	6,318	7,220	8,123	8.5	46	14.2	120
43	904.1	1,808	2,712	3,617	4,521	5,425	6,329	7,233	8,137	8.6	47	14.3	122
44	905.7	1,811	2,717	3,623	4,529	5,434	6,340	7,246	8,151	8.7	48	14.4	124
45	907.3	1,814	2,722	3,629	4,537	5,444	6,351	7,258	8,166	8.8	49	14.5	125
46	908.9	1,818	2,727	3,636	4,544	5,453	6,362	7,271	8,180	8.9	50	14.6	127
47	910.5	1,821	2,731	3,642	4,552	5,463	6,373	7,284	8,194	9.0	51	14.7	129
48	912.0	1,824	2,736	3,648	4,560	5,472	6,384	7,296	8,208	9.1	52	14.8	130
49	913.6	1,827	2,741	3,654	4,568	5,482	6,395	7,309	8,223	9.2	53	14.9	132
50	915.2	1,830	2,746	3,661	4,576	5,491	6,406	7,322	8,237	9.3	54	15.0	134
51	916.8	1,833	2,750	3,667	4,584	5,501	6,417	7,334	8,251	9.4	55	15.1	135
52	918.4	1,837	2,755	3,673	4,592	5,510	6,429	7,347	8,265	9.5	56	15.2	137
53	919.9	1,840	2,760	3,680	4,600	5,520	6,440	7,360	8,279	9.6	58	15.3	139
54	921.5	1,843	2,765	3,686	4,608	5,529	6,451	7,372	8,294	9.7	59	15.4	141
55	923.1	1,846	2,769	3,692	4,616	5,539	6,462	7,385	8,308	9.8	60	15.5	142
56	924.7	1,849	2,774	3,699	4,623	5,548	6,473	7,397	8,322	9.9	61	15.6	144
57	926.3	1,852	2,779	3,705	4,631	5,558	6,484	7,410	8,336	10.0	62	15.7	146
58	927.8	1,855	2,784	3,711	4,639	5,567	6,495	7,423	8,351	10.1	63	15.8	148
59	929.4	1,859	2,788	3,718	4,647	5,577	6,506	7,435	8,365			15.9	150
60	931.0	1,862	2,793	3,724	4,655	5,586	6,517	7,448	8,379			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

10°

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction and height of instrument. <sup>a</sup>			
										Miles.	Fath.	Miles.	Feet
0	931.0	1.862	2.793	3.724	4.655	5.586	6.517	7.448	8.379				
1	932.6	1.865	2.798	3.730	4.663	5.596	6.528	7.461	8.393	1.6	0	10.2	64
2	934.2	1.868	2.803	3.737	4.671	5.605	6.539	7.473	8.408	2.1	7	10.3	65
3	935.8	1.872	2.807	3.743	4.679	5.615	6.550	7.486	8.422	2.5	8	10.4	67
4	937.4	1.875	2.812	3.749	4.687	5.624	6.561	7.499	8.436	2.8	9	10.5	68
5	938.9	1.878	2.817	3.756	4.695	5.634	6.573	7.512	8.450	3.1	10	10.6	69
6	940.5	1.881	2.822	3.762	4.703	5.643	6.584	7.524	8.465	3.4	11	10.7	70
7	942.1	1.884	2.826	3.768	4.711	5.653	6.595	7.537	8.479	3.6	12	10.8	71
8	943.7	1.887	2.831	3.775	4.718	5.662	6.606	7.550	8.493	3.8	13	10.9	73
9	945.3	1.891	2.836	3.781	4.726	5.672	6.617	7.562	8.508	4.1	14	11.0	74
10	946.9	1.894	2.841	3.787	4.734	5.681	6.628	7.575	8.522	4.3	15	11.1	75
11	948.5	1.897	2.845	3.794	4.742	5.691	6.639	7.588	8.536	4.5	16	11.2	77
12	950.0	1.900	2.850	3.800	4.750	5.700	6.650	7.600	8.550	4.7	17	11.3	78
13	951.6	1.903	2.855	3.807	4.758	5.710	6.661	7.613	8.565	4.8	18	11.4	79
14	953.2	1.906	2.860	3.813	4.766	5.719	6.672	7.626	8.579	5.0	19	11.5	80
15	954.8	1.910	2.864	3.819	4.774	5.729	6.684	7.639	8.593	5.2	20	11.6	82
16	956.4	1.913	2.869	3.826	4.782	5.738	6.695	7.651	8.607	5.4	21	11.7	83
17	958.0	1.916	2.874	3.832	4.790	5.748	6.706	7.664	8.622	5.5	22	11.8	84
18	959.6	1.919	2.879	3.838	4.798	5.757	6.717	7.676	8.636	5.7	23	11.9	86
19	961.1	1.922	2.883	3.845	4.806	5.767	6.728	7.689	8.650	5.8	24	12.0	87
20	962.7	1.926	2.888	3.851	4.814	5.776	6.739	7.702	8.665	6.0	25	12.1	89
21	964.3	1.929	2.893	3.857	4.822	5.786	6.750	7.715	8.679	6.1	26	12.2	90
22	965.9	1.932	2.898	3.864	4.830	5.796	6.761	7.727	8.693	6.3	27	12.3	91
23	967.5	1.935	2.902	3.870	4.837	5.806	6.772	7.740	8.707	6.4	28	12.4	93
24	969.1	1.938	2.907	3.876	4.845	5.814	6.784	7.753	8.722	6.5	29	12.5	94
25	970.7	1.941	2.912	3.883	4.853	5.824	6.795	7.766	8.736	6.7	30	12.6	96
26	972.2	1.944	2.917	3.889	4.861	5.833	6.806	7.778	8.750	6.8	31	12.7	97
27	973.8	1.948	2.921	3.896	4.869	5.843	6.817	7.791	8.764	6.9	32	12.8	99
28	975.4	1.951	2.926	3.902	4.877	5.853	6.828	7.803	8.779	7.0	33	12.9	100
29	977.0	1.954	2.931	3.908	4.885	5.862	6.839	7.816	8.793	7.2	34	13.0	102
30	978.6	1.957	2.936	3.914	4.893	5.872	6.850	7.829	8.807	7.3	35	13.1	103
31	980.2	1.960	2.941	3.921	4.901	5.881	6.861	7.841	8.822	7.4	36	13.2	105
32	981.8	1.964	2.945	3.927	4.909	5.891	6.872	7.851	8.836	7.5	37	13.3	106
33	983.4	1.967	2.950	3.933	4.917	5.900	6.884	7.867	8.850	7.6	38	13.4	108
34	985.0	1.970	2.955	3.940	4.925	5.910	6.895	7.880	8.865	7.8	39	13.5	109
35	986.5	1.973	2.960	3.946	4.933	5.919	6.906	7.892	8.879	7.9	40	13.6	111
36	988.1	1.976	2.964	3.953	4.941	5.929	6.917	7.905	8.893	8.0	41	13.7	112
37	989.7	1.980	2.969	3.959	4.949	5.938	6.928	7.918	8.908	8.1	42	13.8	114
38	991.3	1.983	2.974	3.965	4.957	5.948	6.939	7.931	8.922	8.2	43	13.9	115
39	992.9	1.986	2.979	3.972	4.965	5.957	6.950	7.943	8.936	8.3	44	14.0	117
40	994.5	1.989	2.984	3.978	4.973	5.967	6.962	7.956	8.951	8.4	45	14.1	119
41	996.1	1.992	2.988	3.984	4.981	5.977	6.973	7.969	8.965	8.5	46	14.2	120
42	997.7	1.995	2.993	3.991	4.989	5.986	6.984	7.981	8.979	8.6	47	14.3	122
43	999.3	1.999	2.998	3.997	4.996	5.996	6.995	7.994	8.993	8.7	48	14.4	124
44	1,000.9	2.002	3.005	4.003	5.004	6.005	7.006	8.007	9.008	8.8	49	14.5	125
45	1,002.5	2.006	3.007	4.010	5.012	6.015	7.017	8.020	9.022	8.9	50	14.6	127
46	1,004.0	2.009	3.012	4.016	5.020	6.024	7.028	8.032	9.036	9.0	51	14.7	129
47	1,005.6	2.013	3.017	4.023	5.028	6.033	7.039	8.045	9.051	9.1	52	14.8	130
48	1,007.2	2.014	3.022	4.029	5.036	6.043	7.051	8.058	9.065	9.2	53	14.9	132
49	1,008.8	2.018	3.026	4.035	5.044	6.053	7.062	8.071	9.079	9.3	54	15.0	134
50	1,010.4	2.021	3.031	4.042	5.052	6.062	7.073	8.083	9.094	9.4	55	15.1	135
51	1,012.0	2.024	3.036	4.048	5.060	6.072	7.084	8.096	9.108	9.5	56	15.2	137
52	1,013.6	2.027	3.041	4.054	5.068	6.082	7.095	8.109	9.122	9.6	57	15.3	139
53	1,015.2	2.030	3.046	4.061	5.077	6.091	7.106	8.121	9.137	9.7	58	15.4	141
54	1,016.8	2.034	3.050	4.067	5.084	6.101	7.111	8.131	9.151	9.8	59	15.5	142
55	1,018.4	2.037	3.055	4.073	5.092	6.110	7.129	8.147	9.165	9.9	60	15.6	144
56	1,020.0	2.040	3.060	4.080	5.100	6.120	7.140	8.160	9.180	10.0	61	15.7	146
57	1,021.6	2.043	3.065	4.086	5.108	6.129	7.151	8.171	9.194	10.1	62	15.8	148
58	1,023.1	2.046	3.070	4.093	5.117	6.139	7.162	8.185	9.208	10.2	63	15.9	150
59	1,024.7	2.049	3.074	4.099	5.124	6.148	7.173	8.198	9.223	10.3	64	16.0	151
60	1,026.3	2.053	3.079	4.105	5.132	6.158	7.184	8.211	9.237				

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.



TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

11°

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Feet.	Miles.	Feet.
0	1.026.3	2.058	3.079	4.106	5.132	6.158	7.184	8.211	9.237				
1	1.027.9	2.058	3.084	4.112	5.140	6.168	7.195	8.223	9.251	1.6	0	10.2	64
2	1.029.5	2.059	3.089	4.118	5.148	6.177	7.207	8.236	9.266	2.1	7	10.3	65
3	1.031.1	2.062	3.093	4.124	5.156	6.187	7.218	8.249	9.280	2.5	8	10.4	67
4	1.032.7	2.065	3.098	4.131	5.164	6.196	7.229	8.262	9.294	2.8	9	10.5	68
5	1.034.3	2.069	3.103	4.137	5.172	6.206	7.240	8.275	9.309	3.1	10	10.6	69
6	1.036	2.072	3.108	4.144	5.180	6.215	7.251	8.287	9.323	3.4	11	10.7	70
7	1.038	2.075	3.113	4.150	5.188	6.225	7.263	8.300	9.338	3.6	12	10.8	71
8	1.039	2.078	3.117	4.156	5.196	6.235	7.274	8.313	9.352	3.8	13	10.9	73
9	1.041	2.081	3.122	4.163	5.204	6.244	7.285	8.326	9.366				
10	1.042	2.085	3.127	4.169	5.212	6.254	7.296	8.338	9.381	4.1	14	11.0	74
11	1.044	2.088	3.132	4.176	5.219	6.263	7.307	8.351	9.395	4.3	15	11.1	75
12	1.045	2.091	3.136	4.182	5.227	6.273	7.318	8.364	9.409	4.5	16	11.2	77
13	1.047	2.094	3.141	4.188	5.235	6.283	7.330	8.377	9.424	4.7	17	11.3	78
14	1.049	2.097	3.146	4.195	5.243	6.292	7.341	8.390	9.438	4.8	18	11.4	79
15	1.050	2.101	3.151	4.201	5.251	6.302	7.352	8.402	9.453	5.0	19	11.5	80
16	1.052	2.104	3.156	4.208	5.259	6.311	7.363	8.415	9.467	5.2	20	11.6	82
17	1.053	2.107	3.160	4.214	5.267	6.321	7.374	8.428	9.481	5.4	21	11.7	83
18	1.055	2.110	3.165	4.220	5.275	6.330	7.386	8.441	9.496	5.5	22	11.8	84
19	1.057	2.113	3.170	4.227	5.283	6.340	7.397	8.453	9.510	5.7	23	11.9	85
20	1.058	2.117	3.175	4.233	5.291	6.350	7.408	8.466	9.524	5.8	24	12.0	87
21	1.060	2.120	3.180	4.239	5.299	6.359	7.419	8.479	9.539	6.0	25	12.1	89
22	1.061	2.123	3.184	4.246	5.307	6.369	7.430	8.492	9.553	6.1	26	12.2	90
23	1.063	2.126	3.189	4.252	5.315	6.378	7.441	8.504	9.568	6.3	27	12.3	91
24	1.065	2.129	3.194	4.259	5.323	6.388	7.453	8.517	9.582	6.4	28	12.4	93
25	1.066	2.133	3.199	4.265	5.331	6.398	7.464	8.530	9.596	6.5	29	12.5	94
26	1.068	2.136	3.204	4.271	5.339	6.407	7.475	8.543	9.611	6.7	30	12.6	96
27	1.069	2.139	3.208	4.278	5.347	6.417	7.486	8.556	9.625	6.8	31	12.7	97
28	1.071	2.142	3.213	4.284	5.355	6.426	7.497	8.568	9.639	6.9	32	12.8	99
29	1.073	2.145	3.218	4.291	5.363	6.436	7.509	8.581	9.654	7.0	33	12.9	100
30	1.074	2.148	3.223	4.297	5.371	6.445	7.520	8.594	9.668	7.2	34	13.0	102
31	1.075	2.152	3.227	4.303	5.379	6.455	7.531	8.607	9.682	7.3	35	13.1	103
32	1.077	2.156	3.232	4.310	5.387	6.465	7.542	8.619	9.697	7.4	36	13.2	105
33	1.079	2.158	3.237	4.316	5.395	6.474	7.553	8.632	9.711	7.5	37	13.3	106
34	1.081	2.161	3.242	4.323	5.403	6.484	7.564	8.645	9.726	7.6	38	13.4	108
35	1.082	2.164	3.247	4.329	5.411	6.493	7.576	8.658	9.740	7.8	39	13.5	109
36	1.084	2.168	3.252	4.335	5.419	6.503	7.587	8.671	9.755	7.9	40	13.6	111
37	1.085	2.171	3.256	4.342	5.427	6.513	7.598	8.683	9.769	8.0	41	13.7	112
38	1.087	2.174	3.261	4.348	5.435	6.522	7.609	8.696	9.783	8.1	42	13.8	114
39	1.089	2.177	3.266	4.355	5.443	6.532	7.621	8.709	9.798	8.2	43	13.9	115
40	1.090	2.181	3.271	4.361	5.451	6.542	7.632	8.722	9.812	8.3	44	14.0	117
41	1.092	2.184	3.276	4.367	5.459	6.551	7.643	8.735	9.827	8.4	45	14.1	119
42	1.093	2.187	3.280	4.374	5.467	6.561	7.654	8.748	9.841	8.5	46	14.2	120
43	1.095	2.190	3.285	4.380	5.475	6.570	7.665	8.760	9.856	8.6	47	14.3	122
44	1.097	2.193	3.290	4.387	5.483	6.580	7.677	8.773	9.870	8.7	48	14.4	124
45	1.098	2.197	3.295	4.393	5.491	6.590	7.688	8.786	9.884	8.8	49	14.5	125
46	1.100	2.200	3.300	4.399	5.499	6.599	7.699	8.799	9.899	8.9	50	14.6	127
47	1.101	2.203	3.304	4.406	5.507	6.609	7.710	8.812	9.913	9.0	51	14.7	129
48	1.103	2.206	3.309	4.412	5.515	6.618	7.721	8.825	9.928	9.1	52	14.8	130
49	1.105	2.209	3.314	4.419	5.523	6.628	7.733	8.837	9.942	9.2	53	14.9	132
50	1.106	2.213	3.319	4.425	5.531	6.638	7.744	8.850	9.956	9.3	54	15.0	134
51	1.108	2.216	3.324	4.431	5.539	6.647	7.755	8.863	9.971	9.4	55	15.1	135
52	1.109	2.219	3.328	4.438	5.547	6.657	7.766	8.876	9.985	9.5	56	15.2	137
53	1.111	2.222	3.333	4.444	5.555	6.666	7.778	8.889	10.000	9.6	58	15.3	139
54	1.113	2.225	3.338	4.451	5.563	6.676	7.789	8.901	10.014	9.7	59	15.4	141
55	1.114	2.229	3.343	4.457	5.571	6.686	7.800	8.914	10.029	9.8	60	15.5	142
56	1.116	2.232	3.348	4.464	5.579	6.696	7.811	8.927	10.043	9.9	61	15.6	144
57	1.117	2.235	3.352	4.470	5.587	6.705	7.822	8.940	10.057	10.0	62	15.7	146
58	1.119	2.238	3.357	4.476	5.595	6.715	7.834	8.953	10.072	10.1	63	15.8	148
59	1.121	2.241	3.362	4.483	5.603	6.724	7.845	8.966	10.086			15.9	150
60	1.122	2.245	3.367	4.489	5.611	6.734	7.856	8.978	10.101			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 6 feet. Height of instrument is assumed 4.5 feet.



TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

12°.

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument.*			
										Miles.	Feet.	Miles.	Feet.
0	1,122	2,245	3,367	4,489	5,612	6,734	7,856	8,978	10,101				
1	1,124	2,248	3,372	4,496	5,620	6,743	7,867	8,991	10,115	1.6	6	10.2	64
2	1,126	2,251	3,377	4,502	5,628	6,753	7,879	9,004	10,130	2.1	7	10.3	65
3	1,127	2,254	3,381	4,508	5,636	6,763	7,890	9,017	10,144	2.6	8	10.4	67
4	1,129	2,257	3,386	4,515	5,644	6,772	7,901	9,030	10,159	3.1	10	10.6	69
5	1,130	2,261	3,391	4,521	5,652	6,782	7,912	9,043	10,173	3.4	11	10.7	70
6	1,132	2,264	3,396	4,528	5,660	6,792	7,924	9,058	10,188	3.6	12	10.8	71
7	1,134	2,267	3,401	4,534	5,668	6,801	7,935	9,068	10,202	3.8	13	10.9	73
8	1,135	2,270	3,405	4,541	5,676	6,811	7,946	9,081	10,216				
9	1,137	2,274	3,410	4,547	5,684	6,821	7,957	9,094	10,231				
10	1,138	2,277	3,415	4,554	5,692	6,830	7,969	9,107	10,245	4.1	14	11.0	74
11	1,140	2,280	3,420	4,560	5,700	6,840	7,980	9,120	10,260	4.3	15	11.1	75
12	1,142	2,283	3,425	4,566	5,708	6,850	7,991	9,133	10,274	4.5	16	11.2	77
13	1,143	2,286	3,430	4,573	5,716	6,860	8,002	9,146	10,289	4.7	17	11.3	78
14	1,145	2,290	3,434	4,579	5,724	6,869	8,014	9,158	10,303	4.8	18	11.4	79
15	1,146	2,293	3,439	4,586	5,732	6,879	8,025	9,171	10,318	5.0	19	11.5	80
16	1,148	2,296	3,444	4,592	5,740	6,888	8,036	9,184	10,332	5.2	20	11.6	82
17	1,150	2,299	3,449	4,599	5,748	6,898	8,047	9,197	10,347	5.4	21	11.7	83
18	1,151	2,302	3,454	4,606	5,756	6,907	8,059	9,210	10,361	5.6	22	11.8	84
19	1,153	2,306	3,459	4,611	5,764	6,917	8,070	9,223	10,376	5.7	23	11.9	86
20	1,154	2,309	3,463	4,618	5,772	6,927	8,081	9,236	10,390	5.8	24	12.0	87
21	1,156	2,312	3,468	4,624	5,780	6,936	8,092	9,249	10,405	6.0	25	12.1	89
22	1,158	2,315	3,473	4,631	5,788	6,946	8,104	9,261	10,419	6.1	26	12.2	90
23	1,159	2,319	3,478	4,637	5,796	6,956	8,115	9,274	10,434	6.3	27	12.3	91
24	1,161	2,322	3,483	4,644	5,804	6,965	8,126	9,287	10,448	6.4	28	12.4	93
25	1,163	2,325	3,487	4,650	5,812	6,975	8,138	9,300	10,463	6.5	29	12.5	94
26	1,164	2,328	3,492	4,656	5,821	6,985	8,149	9,313	10,477	6.7	30	12.6	96
27	1,166	2,331	3,497	4,663	5,829	6,994	8,160	9,326	10,491	6.8	31	12.7	97
28	1,167	2,335	3,502	4,669	5,837	7,004	8,171	9,339	10,506	6.9	32	12.8	99
29	1,169	2,338	3,507	4,676	5,845	7,014	8,183	9,351	10,520	7.0	33	12.9	100
30	1,171	2,341	3,512	4,682	5,853	7,023	8,194	9,364	10,535	7.2	34	13.0	102
31	1,172	2,344	3,516	4,689	5,861	7,033	8,205	9,377	10,549	7.3	35	13.1	103
32	1,174	2,348	3,521	4,695	5,869	7,043	8,216	9,390	10,564	7.4	36	13.2	105
33	1,175	2,351	3,526	4,702	5,877	7,052	8,228	9,403	10,579	7.5	37	13.3	106
34	1,177	2,354	3,531	4,708	5,885	7,062	8,239	9,416	10,593	7.6	38	13.4	108
35	1,179	2,357	3,536	4,714	5,893	7,072	8,250	9,429	10,608	7.8	39	13.5	109
36	1,180	2,360	3,541	4,721	5,901	7,081	8,262	9,442	10,622	7.9	40	13.6	111
37	1,182	2,364	3,546	4,727	5,909	7,091	8,273	9,455	10,637	8.0	41	13.7	112
38	1,183	2,367	3,550	4,734	5,917	7,101	8,284	9,468	10,651	8.1	42	13.8	114
39	1,185	2,370	3,555	4,740	5,925	7,110	8,296	9,481	10,666	8.2	43	13.9	115
40	1,187	2,373	3,560	4,747	5,933	7,120	8,307	9,494	10,680	8.3	44	14.0	117
41	1,188	2,377	3,565	4,753	5,941	7,130	8,318	9,506	10,695	8.4	45	14.1	119
42	1,190	2,380	3,570	4,760	5,950	7,140	8,329	9,519	10,709	8.5	46	14.2	120
43	1,192	2,383	3,575	4,766	5,958	7,149	8,341	9,532	10,724	8.6	47	14.3	122
44	1,195	2,387	3,579	4,773	5,966	7,159	8,352	9,545	10,738	8.7	48	14.4	124
45	1,195	2,390	3,584	4,779	5,974	7,169	8,363	9,558	10,753	8.8	49	14.5	126
46	1,196	2,393	3,589	4,785	5,982	7,178	8,374	9,571	10,767	8.9	50	14.6	127
47	1,198	2,396	3,594	4,792	5,990	7,188	8,386	9,584	10,782	9.0	51	14.7	129
48	1,200	2,399	3,599	4,798	5,998	7,198	8,397	9,597	10,796	9.1	52	14.8	130
49	1,201	2,402	3,604	4,805	6,006	7,207	8,409	9,610	10,811	9.2	53	14.9	132
50	1,203	2,406	3,608	4,811	6,014	7,217	8,420	9,623	10,825	9.3	54	15.0	134
1	1,204	2,409	3,613	4,818	6,022	7,227	8,431	9,636	10,840	9.4	55	15.1	135
2	1,206	2,412	3,618	4,824	6,030	7,236	8,442	9,648	10,855	9.5	56	15.2	137
3	1,208	2,415	3,623	4,831	6,038	7,246	8,454	9,661	10,869	9.6	58	15.3	139
4	1,209	2,419	3,628	4,837	6,046	7,256	8,465	9,674	10,884	9.7	59	15.4	141
5	1,211	2,422	3,633	4,844	6,054	7,265	8,476	9,687	10,898	9.8	60	15.5	142
6	1,213	2,425	3,638	4,850	6,062	7,275	8,488	9,700	10,913	9.9	61	15.6	144
7	1,214	2,428	3,643	4,857	6,070	7,284	8,499	9,713	10,927	10.0	62	15.7	146
8	1,216	2,431	3,647	4,863	6,079	7,294	8,510	9,726	10,942	10.1	63	15.8	148
9	1,217	2,435	3,652	4,869	6,087	7,304	8,521	9,739	10,956			15.9	150
												16.0	151
60	1,219	2,438	3,657	4,876	6,095	7,314	8,533	9,752	10,971				

\* For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 26.—For obtaining differences of altitude for any minute, etc.—Continued.

13°.

	1	2	3	4	5	6	7	8	9	Corrections for curva- ture, refraction, and height of instrument. <sup>a</sup>			
										Miles.	Feet.	Miles.	Feet.
0	1,219	2,438	3,657	4,876	6,095	7,314	8,533	9,752	10,971				
1	1,221	2,441	3,662	4,882	6,103	7,324	8,544	9,765	10,985	1.6	6	10.2	64
2	1,222	2,444	3,667	4,889	6,111	7,333	8,556	9,778	11,000	2.1	7	10.3	65
3	1,224	2,448	3,672	4,895	6,119	7,343	8,567	9,791	11,015	2.5	8	10.4	67
4	1,225	2,451	3,676	4,902	6,127	7,353	8,578	9,804	11,029	2.8	9	10.5	68
5	1,227	2,454	3,681	4,908	6,135	7,362	8,590	9,817	11,044	3.1	10	10.6	69
6	1,229	2,457	3,686	4,915	6,143	7,372	8,601	9,830	11,058	3.4	11	10.7	70
7	1,230	2,461	3,691	4,921	6,152	7,382	8,612	9,843	11,073	3.6	12	10.8	71
8	1,232	2,464	3,696	4,928	6,160	7,392	8,624	9,855	11,087	3.8	13	10.9	73
9	1,234	2,467	3,701	4,934	6,168	7,401	8,635	9,868	11,102				
10	1,235	2,470	3,706	4,941	6,176	7,411	8,646	9,881	11,117	4.1	14	11.0	74
11	1,237	2,474	3,710	4,947	6,184	7,421	8,658	9,894	11,131	4.3	15	11.1	75
12	1,238	2,477	3,715	4,954	6,192	7,430	8,669	9,907	11,146	4.5	16	11.2	77
13	1,240	2,480	3,720	4,960	6,200	7,440	8,680	9,920	11,160	4.7	17	11.3	78
14	1,243	2,483	3,725	4,967	6,208	7,450	8,692	9,933	11,175	4.8	18	11.4	79
15	1,243	2,487	3,730	4,973	6,216	7,460	8,703	9,946	11,190	5.0	19	11.5	80
16	1,245	2,490	3,735	4,980	6,224	7,469	8,714	9,959	11,204	5.2	20	11.6	82
17	1,247	2,493	3,740	4,986	6,233	7,479	8,726	9,972	11,219	5.4	21	11.7	83
18	1,248	2,496	3,744	4,993	6,241	7,489	8,737	9,985	11,233	5.5	22	11.8	84
19	1,250	2,500	3,749	4,999	6,249	7,499	8,748	9,998	11,248	5.7	23	11.9	86
20	1,251	2,503	3,754	5,006	6,257	7,508	8,760	10,011	11,262	5.8	24	12.0	87
21	1,253	2,506	3,759	5,012	6,265	7,518	8,771	10,024	11,277	6.0	25	12.1	89
22	1,255	2,509	3,764	5,019	6,273	7,528	8,782	10,037	11,292	6.1	26	12.2	90
23	1,256	2,513	3,769	5,025	6,281	7,537	8,794	10,050	11,306	6.3	27	12.3	91
24	1,258	2,516	3,774	5,032	6,289	7,547	8,805	10,063	11,321	6.4	28	12.4	93
25	1,260	2,519	3,779	5,038	6,297	7,557	8,816	10,076	11,336	6.5	29	12.5	94
26	1,261	2,522	3,783	5,044	6,306	7,567	8,828	10,089	11,350	6.7	30	12.6	96
27	1,263	2,525	3,788	5,051	6,314	7,576	8,839	10,102	11,365	6.8	31	12.7	97
28	1,264	2,529	3,793	5,057	6,322	7,586	8,851	10,115	11,379	6.9	32	12.8	99
29	1,266	2,532	3,798	5,064	6,330	7,596	8,862	10,128	11,394	7.0	33	12.9	100
30	1,268	2,535	3,803	5,070	6,338	7,606	8,873	10,141	11,409	7.2	34	13.0	102
31	1,269	2,538	3,808	5,077	6,346	7,615	8,885	10,154	11,423	7.3	35	13.1	103
32	1,271	2,542	3,813	5,083	6,354	7,625	8,896	10,167	11,438	7.4	36	13.2	105
33	1,273	2,545	3,817	5,090	6,362	7,635	8,907	10,180	11,452	7.5	37	13.3	106
34	1,274	2,548	3,822	5,096	6,371	7,645	8,919	10,193	11,467	7.6	38	13.4	108
35	1,276	2,551	3,827	5,103	6,379	7,654	8,930	10,206	11,482	7.8	39	13.5	109
36	1,277	2,555	3,832	5,109	6,387	7,664	8,942	10,219	11,496	7.9	40	13.6	111
37	1,279	2,558	3,837	5,116	6,395	7,674	8,953	10,232	11,511	8.0	41	13.7	112
38	1,281	2,561	3,842	5,122	6,403	7,684	8,964	10,245	11,526	8.1	42	13.8	114
39	1,282	2,565	3,847	5,129	6,411	7,693	8,976	10,258	11,540	8.2	43	13.9	116
40	1,284	2,568	3,852	5,135	6,419	7,703	8,987	10,271	11,555	8.3	44	14.0	117
41	1,286	2,571	3,857	5,142	6,427	7,713	8,999	10,284	11,569	8.4	45	14.1	119
42	1,287	2,574	3,861	5,149	6,436	7,723	9,010	10,297	11,584	8.5	46	14.2	120
43	1,289	2,578	3,866	5,155	6,444	7,732	9,021	10,310	11,599	8.6	47	14.3	122
44	1,290	2,581	3,871	5,162	6,452	7,742	9,033	10,323	11,613	8.7	48	14.4	124
45	1,292	2,584	3,876	5,168	6,460	7,752	9,044	10,336	11,628	8.8	49	14.5	125
46	1,294	2,587	3,881	5,175	6,468	7,762	9,055	10,349	11,643	8.9	50	14.6	127
47	1,295	2,591	3,886	5,181	6,476	7,771	9,067	10,362	11,657	9.0	51	14.7	129
48	1,297	2,594	3,891	5,188	6,484	7,781	9,078	10,375	11,672	9.1	52	14.8	130
49	1,299	2,597	3,896	5,194	6,493	7,791	9,090	10,388	11,687	9.2	53	14.9	132
50	1,300	2,600	3,900	5,201	6,501	7,801	9,101	10,401	11,701	9.3	54	15.0	134
51	1,302	2,604	3,905	5,207	6,509	7,811	9,112	10,414	11,716	9.4	55	15.1	135
52	1,303	2,607	3,910	5,214	6,517	7,820	9,124	10,427	11,731	9.5	56	15.2	137
53	1,305	2,610	3,915	5,220	6,525	7,830	9,135	10,440	11,745	9.6	58	15.3	139
54	1,307	2,613	3,920	5,227	6,533	7,840	9,147	10,453	11,760	9.7	59	15.4	141
55	1,308	2,617	3,925	5,233	6,541	7,850	9,158	10,466	11,775	9.8	60	15.5	142
56	1,310	2,620	3,930	5,240	6,550	7,859	9,170	10,479	11,789	9.9	61	15.6	144
57	1,312	2,623	3,935	5,246	6,558	7,869	9,181	10,492	11,804	10.0	62	15.7	146
58	1,313	2,626	3,940	5,253	6,566	7,879	9,192	10,506	11,819	10.1	63	15.8	148
59	1,315	2,630	3,944	5,259	6,574	7,889	9,204	10,519	11,833			15.9	150
60	1,316	2,633	3,949	5,266	6,582	7,899	9,215	10,532	11,848			16.0	151

<sup>a</sup> For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 22.—For obtaining differences of altitude for any minute, etc.—Continued.

14°.

	1	2	3	4	5	6	7	8	9	Corrections for curvature, refraction, and height of instrument <sup>a</sup>			
										Miles.	Fms.	Miles.	Fms.
0	1,316	2,633	3,949	5,266	6,582	7,899	9,215	10,532	11,848				
1	1,318	2,636	3,954	5,272	6,590	7,909	9,227	10,545	11,863	1.6	8	10.2	62
2	1,320	2,639	3,959	5,279	6,599	7,918	9,238	10,558	11,877	2.1	7	10.3	66
3	1,321	2,643	3,964	5,286	6,607	7,928	9,249	10,571	11,892	2.5	8	10.4	67
4	1,323	2,646	3,969	5,292	6,615	7,938	9,261	10,584	11,907	2.8	9	10.5	69
5	1,325	2,649	3,974	5,298	6,623	7,948	9,272	10,597	11,923	3.1	10	10.6	70
6	1,326	2,653	3,979	5,305	6,631	7,957	9,284	10,610	11,936	3.4	11	10.7	71
7	1,328	2,656	3,984	5,312	6,639	7,967	9,295	10,623	11,951	3.6	12	10.8	73
8	1,330	2,659	3,989	5,318	6,648	7,977	9,307	10,636	11,966	3.8	13	10.9	75
9	1,331	2,662	3,993	5,325	6,656	7,987	9,318	10,649	11,980				
10	1,333	2,666	3,998	5,331	6,664	7,997	9,329	10,662	11,995	4.1	14	11.0	76
11	1,334	2,669	4,003	5,338	6,672	8,006	9,341	10,675	12,010	4.3	15	11.1	78
12	1,336	2,672	4,008	5,344	6,680	8,016	9,352	10,688	12,024	4.6	16	11.2	77
13	1,338	2,675	4,013	5,351	6,688	8,026	9,364	10,701	12,039	4.7	17	11.3	79
14	1,339	2,679	4,018	5,357	6,697	8,036	9,375	10,715	12,054	4.8	18	11.4	80
15	1,341	2,682	4,023	5,364	6,705	8,046	9,387	10,728	12,069	5.0	19	11.5	82
16	1,343	2,685	4,028	5,370	6,713	8,056	9,398	10,741	12,083	5.2	20	11.6	83
17	1,344	2,688	4,033	5,377	6,721	8,065	9,410	10,754	12,098	5.4	21	11.7	85
18	1,346	2,692	4,038	5,383	6,729	8,075	9,421	10,767	12,113	5.5	22	11.8	84
19	1,348	2,695	4,042	5,390	6,737	8,085	9,432	10,780	12,127	5.7	23	11.9	86
20	1,349	2,698	4,047	5,397	6,746	8,095	9,444	10,793	12,142	5.8	24	12.0	87
21	1,351	2,702	4,052	5,403	6,754	8,105	9,455	10,806	12,157	6.0	25	12.1	89
22	1,352	2,705	4,057	5,410	6,762	8,114	9,467	10,819	12,172	6.1	26	12.2	90
23	1,354	2,708	4,062	5,416	6,770	8,124	9,478	10,832	12,186	6.3	27	12.3	91
24	1,356	2,711	4,067	5,423	6,778	8,134	9,490	10,845	12,201	6.4	28	12.4	93
25	1,357	2,715	4,072	5,429	6,787	8,144	9,501	10,859	12,216	6.5	29	12.5	94
26	1,359	2,718	4,077	5,436	6,795	8,154	9,513	10,872	12,231	6.7	30	12.6	96
27	1,361	2,721	4,082	5,442	6,803	8,164	9,524	10,885	12,245	6.8	31	12.7	97
28	1,362	2,724	4,087	5,449	6,811	8,173	9,536	10,898	12,260	6.9	32	12.8	99
29	1,364	2,728	4,092	5,455	6,819	8,183	9,547	10,911	12,275	7.0	33	12.9	100
30	1,366	2,731	4,097	5,462	6,828	8,193	9,559	10,924	12,290	7.2	34	13.0	102
31	1,368	2,734	4,101	5,469	6,836	8,203	9,570	10,937	12,304	7.3	35	13.1	103
32	1,369	2,738	4,106	5,475	6,844	8,213	9,581	10,950	12,319	7.4	36	13.2	105
33	1,370	2,741	4,111	5,482	6,852	8,223	9,593	10,963	12,334	7.5	37	13.3	106
34	1,372	2,744	4,116	5,488	6,860	8,232	9,604	10,976	12,349	7.6	38	13.4	108
35	1,374	2,747	4,121	5,495	6,868	8,242	9,616	10,990	12,363	7.8	39	13.5	109
36	1,375	2,751	4,126	5,501	6,877	8,252	9,627	11,003	12,378	7.9	40	13.6	111
37	1,377	2,754	4,131	5,508	6,885	8,262	9,639	11,016	12,393	8.0	41	13.7	112
38	1,379	2,757	4,136	5,514	6,893	8,272	9,650	11,029	12,408	8.1	42	13.8	114
39	1,380	2,761	4,141	5,521	6,901	8,282	9,662	11,042	12,422	8.2	43	13.9	115
40	1,382	2,764	4,146	5,528	6,910	8,291	9,673	11,055	12,437	8.3	44	14.0	117
41	1,384	2,767	4,151	5,534	6,918	8,301	9,685	11,068	12,452	8.4	45	14.1	119
42	1,386	2,770	4,156	5,541	6,926	8,311	9,696	11,081	12,467	8.5	46	14.2	120
43	1,387	2,774	4,160	5,547	6,934	8,321	9,708	11,095	12,481	8.6	47	14.3	122
44	1,389	2,777	4,165	5,554	6,942	8,331	9,719	11,108	12,496	8.7	48	14.4	124
45	1,390	2,780	4,170	5,560	6,951	8,341	9,731	11,121	12,511	8.8	49	14.5	125
46	1,392	2,784	4,175	5,567	6,959	8,351	9,742	11,134	12,526	8.9	50	14.6	127
47	1,393	2,787	4,180	5,574	6,967	8,360	9,754	11,147	12,541	9.0	51	14.7	129
48	1,395	2,790	4,185	5,580	6,975	8,370	9,765	11,160	12,555	9.1	52	14.8	130
49	1,397	2,793	4,190	5,587	6,983	8,380	9,777	11,173	12,570	9.2	53	14.9	132
50	1,398	2,797	4,195	5,593	6,992	8,390	9,788	11,187	12,585	9.3	54	15.0	134
51	1,400	2,800	4,200	5,600	7,000	8,400	9,800	11,200	12,600	9.4	55	15.1	136
52	1,402	2,803	4,205	5,606	7,008	8,410	9,811	11,213	12,615	9.5	56	15.2	137
53	1,403	2,807	4,210	5,613	7,016	8,420	9,823	11,226	12,629	9.6	58	15.3	139
54	1,405	2,810	4,215	5,620	7,024	8,429	9,834	11,239	12,644	9.7	59	15.4	141
55	1,407	2,813	4,220	5,628	7,033	8,439	9,846	11,252	12,659	9.8	60	15.5	142
56	1,408	2,816	4,225	5,635	7,041	8,449	9,857	11,265	12,674	9.9	61	15.6	144
57	1,410	2,820	4,230	5,643	7,049	8,459	9,869	11,279	12,689	10.0	62	15.7	146
58	1,411	2,823	4,234	5,646	7,057	8,469	9,880	11,292	12,703	10.1	63	15.8	148
59	1,413	2,826	4,239	5,653	7,066	8,479	9,892	11,306	12,718			15.9	150
60	1,415	2,830	4,244	5,659	7,074	8,489	9,903	11,319	12,733			16.0	151

<sup>a</sup>For all distances under 1.6 miles the correction may be taken as + 5 feet. Height of instrument is assumed 4.5 feet.

TABLE 27.—HORIZONTAL DISTANCES AND ELEVATIONS FROM STADIA READINGS.

This is a most generally useful stadia table for rods reading 1 foot to the 100 feet and with angles up to  $30^\circ$ . The values of other measures than those given in the table are obtained by multiplying the quantities under the proper vertical angle by stadia readings in hundreds of units. The quantity representing the focal distance is very small and is given at the bottom of each page for focal lengths between three-fourths and  $1\frac{1}{4}$  feet and is represented as a constant equal to  $c$ . For ordinary work it is not necessary to take the latter into account. The direct use of the table involves a multiplication for each result obtained.

*Example.*—Let rod intercept be 3.25 feet, and the angle of inclination be  $5^\circ 35'$ . Then the distance on the horizontal would be

$$d=325 \text{ feet.}$$

If we accept the focal distance  $f+c$  as 1.25 feet, we have from the tables

$$d'=3.25 \text{ feet} \times 99.05 + 1.24 = 323.15 \text{ feet,}$$

and

$$h=3.25 \text{ feet} \times 9.68 + 0.11 = 31.57 \text{ feet.}$$

TABLE 27. -Horizontal distances and elevations from stadia readings.

Minutes.	0°.		1°.		2°.		3°.	
	Horizontal distance.	Difference of elevation.	Horizontal distance.	Difference of elevation.	Horizontal distance.	Difference of elevation.	Horizontal distance.	Difference of elevation.
0	100.00	0.00	99.97	1.74	99.88	3.49	99.73	5.23
2	100.00	0.06	99.97	1.80	99.87	3.55	99.72	5.28
4	100.00	0.12	99.97	1.86	99.87	3.60	99.71	5.34
6	100.00	0.17	99.96	1.92	99.87	3.66	99.71	5.40
8	100.00	0.23	99.96	1.98	99.86	3.72	99.70	5.46
10	100.00	0.29	99.96	2.04	99.86	3.78	99.69	5.52
12	100.00	0.35	99.96	2.09	99.85	3.84	99.69	5.57
14	100.00	0.41	99.95	2.15	99.85	3.90	99.68	5.63
16	100.00	0.47	99.95	2.21	99.84	3.95	99.68	5.69
18	100.00	0.52	99.95	2.27	99.84	4.01	99.67	5.75
20	100.00	0.58	99.95	2.33	99.83	4.07	99.66	5.80
22	100.00	0.64	99.94	2.38	99.83	4.13	99.66	5.86
24	100.00	0.70	99.94	2.44	99.82	4.18	99.65	5.92
26	99.99	0.76	99.94	2.50	99.82	4.24	99.64	5.98
28	99.99	0.81	99.93	2.56	99.81	4.30	99.63	6.04
30	99.99	0.87	99.93	2.62	99.81	4.36	99.63	6.09
32	99.99	0.93	99.93	2.67	99.80	4.42	99.62	6.15
34	99.99	0.99	99.93	2.73	99.80	4.48	99.62	6.21
36	99.99	1.05	99.92	2.79	99.79	4.53	99.61	6.27
38	99.99	1.11	99.92	2.85	99.79	4.59	99.60	6.33
40	99.99	1.16	99.92	2.91	99.78	4.65	99.59	6.38
42	99.99	1.22	99.91	2.97	99.78	4.71	99.59	6.44
44	99.98	1.28	99.91	3.02	99.77	4.76	99.58	6.50
46	99.98	1.34	99.90	3.08	99.77	4.82	99.57	6.56
48	99.98	1.40	99.90	3.14	99.76	4.88	99.56	6.61
50	99.98	1.45	99.90	3.20	99.76	4.94	99.56	6.67
52	99.98	1.51	99.89	3.26	99.75	4.99	99.55	6.73
54	99.98	1.57	99.89	3.31	99.74	5.05	99.54	6.78
56	99.97	1.63	99.89	3.37	99.74	5.11	99.53	6.84
58	99.97	1.69	99.88	3.43	99.73	5.17	99.52	6.90
60	99.97	1.74	99.88	3.49	99.73	5.23	99.51	6.96
c=0.75	0.75	0.01	0.75	0.02	0.75	0.03	0.75	0.05
c=1.00	1.00	0.01	1.00	0.03	1.00	0.04	1.00	0.06
c=1.25	1.25	0.02	1.25	0.03	1.25	0.05	1.25	0.08

TABLE 27. *Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	4°.		5°.		6°.		7°.	
	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.
0	99.51	6.96	99.24	8.68	98.91	10.40	98.51	12.10
2	99.51	7.02	99.23	8.74	98.90	10.45	98.50	12.15
4	99.50	7.07	99.22	8.80	98.88	10.51	98.48	12.21
6	99.49	7.13	99.21	8.85	98.87	10.57	98.47	12.26
8	99.48	7.19	99.20	8.91	98.86	10.62	98.46	12.32
10	99.47	7.25	99.19	8.97	98.85	10.68	98.44	12.38
12	99.46	7.30	99.18	9.03	98.83	10.74	98.43	12.43
14	99.46	7.36	99.17	9.08	98.82	10.79	98.41	12.49
16	99.45	7.42	99.16	9.14	98.81	10.85	98.40	12.55
18	99.44	7.48	99.15	9.20	98.80	10.91	98.39	12.60
20	99.43	7.53	99.14	9.25	98.78	10.96	98.37	12.66
22	99.42	7.59	99.13	9.31	98.77	11.02	98.36	12.72
24	99.41	7.65	99.11	9.37	98.76	11.08	98.34	12.77
26	99.40	7.71	99.10	9.43	98.74	11.13	98.33	12.83
28	99.39	7.76	99.09	9.48	98.73	11.19	98.31	12.88
30	99.38	7.82	99.08	9.54	98.72	11.25	98.29	12.94
32	99.33	7.88	99.07	9.60	98.71	11.30	98.28	13.00
34	99.37	7.94	99.06	9.65	98.69	11.36	98.27	13.05
36	99.36	7.99	99.05	9.71	98.68	11.42	98.25	13.11
38	99.35	8.05	99.04	9.77	98.67	11.47	98.24	13.17
40	99.34	8.11	99.03	9.83	98.65	11.53	98.22	13.22
42	99.33	8.17	99.01	9.88	98.64	11.59	98.20	13.28
44	99.32	8.22	99.00	9.94	98.63	11.64	98.19	13.33
46	99.31	8.28	98.99	10.00	98.61	11.70	98.17	13.39
48	99.30	8.34	98.98	10.05	98.60	11.76	98.16	13.45
50	99.29	8.40	98.97	10.11	98.58	11.81	98.14	13.50
52	99.28	8.45	98.96	10.17	98.57	11.87	98.13	13.56
54	99.27	8.51	98.94	10.22	98.56	11.93	98.11	13.61
56	99.26	8.57	98.93	10.28	98.54	11.98	98.10	13.67
58	99.25	8.63	98.92	10.34	98.53	12.04	98.08	13.73
60	99.24	8.68	98.91	10.40	98.51	12.10	98.06	13.78
$c=0.75$	0.75	0.06	0.75	0.07	0.75	0.08	0.74	0.10
$c=1.00$	1.00	0.08	0.99	0.09	0.99	0.11	0.99	0.13
$c=1.25$	1.25	0.10	1.24	0.11	1.24	0.14	1.24	0.16

# GEOGRAPHIC TABLES AND FORMULAS.

TABLE 17.—Horizontal distances and elevations from stadia readings.—Continued.

Stadia reading.	10°		11°		12°		13°	
	Horizontal distance.	Difference of eleva- tion.	Horizontal distance.	Difference of eleva- tion.	Horizontal distance.	Difference of eleva- tion.	Horizontal distance.	Difference of eleva- tion.
0	98.48	13.78	97.55	15.45	96.98	17.10	96.36	18.73
2	98.46	13.84	97.53	15.51	96.96	17.16	96.34	18.78
4	98.43	13.89	97.52	15.56	96.94	17.21	96.32	18.84
6	98.41	13.95	97.50	15.62	96.92	17.26	96.29	18.89
8	98.40	14.01	97.48	15.67	96.90	17.32	96.27	18.95
10	97.98	14.06	97.46	15.73	96.88	17.37	96.25	19.00
12	97.97	14.12	97.44	15.78	96.86	17.43	96.23	19.05
14	97.95	14.17	97.43	15.84	96.84	17.48	96.21	19.11
16	97.93	14.23	97.41	15.89	96.82	17.54	96.19	19.16
18	97.92	14.28	97.39	15.95	96.80	17.59	96.18	19.21
20	97.90	14.34	97.37	16.00	96.78	17.65	96.14	19.27
22	97.88	14.40	97.35	16.06	96.76	17.70	96.12	19.32
24	97.87	14.45	97.33	16.11	96.74	17.76	96.09	19.38
26	97.85	14.51	97.31	16.17	96.72	17.81	96.07	19.43
28	97.83	14.56	97.29	16.22	96.70	17.86	96.05	19.48
30	97.82	14.62	97.28	16.28	96.68	17.92	96.03	19.54
32	97.80	14.67	97.26	16.33	96.66	17.97	96.00	19.59
34	97.78	14.73	97.24	16.39	96.64	18.03	95.98	19.64
36	97.76	14.79	97.22	16.44	96.62	18.08	95.96	19.70
38	97.75	14.84	97.20	16.50	96.60	18.14	95.93	19.75
40	97.73	14.90	97.18	16.55	96.57	18.19	95.91	19.80
42	97.71	14.96	97.16	16.61	96.55	18.24	95.89	19.86
44	97.69	15.01	97.14	16.66	96.53	18.30	95.86	19.91
46	97.68	15.06	97.12	16.72	96.51	18.35	95.84	19.96
48	97.66	15.12	97.10	16.77	96.49	18.41	95.82	20.02
50	97.64	15.17	97.08	16.83	96.47	18.46	95.79	20.07
52	97.62	15.23	97.06	16.88	96.45	18.51	95.77	20.12
54	97.61	15.28	97.04	16.94	96.42	18.57	95.75	20.18
56	97.59	15.34	97.02	16.99	96.40	18.62	95.72	20.23
58	97.57	15.40	97.00	17.05	96.38	18.68	95.70	20.28
60	97.55	15.45	96.98	17.10	96.36	18.73	95.68	20.34
c=0.75	0.74	0.11	0.74	0.12	0.74	0.14	0.73	0.15
c=1.00	0.99	0.15	0.99	0.16	0.98	0.18	0.98	0.20
c=1.25	1.23	0.18	1.23	0.21	1.23	0.23	1.22	0.25

TABLE 27.—*Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	12°		13°		14°		15°	
	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.
0	95.68	20.34	94.94	21.92	94.15	23.47	93.30	25.00
2	95.65	20.39	94.91	21.97	94.12	23.52	93.27	25.05
4	95.63	20.44	94.89	22.02	94.09	23.58	93.24	25.10
6	95.61	20.50	94.86	22.08	94.07	23.63	93.21	25.15
8	95.58	20.55	94.84	22.13	94.04	23.68	93.18	25.20
10	95.56	20.60	94.81	22.18	94.01	23.73	93.16	25.25
12	95.53	20.66	94.79	22.23	93.98	23.78	93.13	25.30
14	95.51	20.71	94.76	22.28	93.95	23.83	93.10	25.35
16	95.49	20.76	94.73	22.34	93.93	23.88	93.07	25.40
18	95.46	20.81	94.71	22.39	93.90	23.93	93.04	25.45
20	95.44	20.87	94.68	22.44	93.87	23.99	93.01	25.50
22	95.41	20.92	94.66	22.49	93.84	24.04	92.98	25.55
24	95.39	20.97	94.63	22.54	93.81	24.09	92.95	25.60
26	95.36	21.03	94.60	22.60	93.79	24.14	92.92	25.65
28	95.34	21.08	94.58	22.65	93.76	24.19	92.89	25.70
30	95.32	21.13	94.55	22.70	93.73	24.24	92.86	25.75
32	95.29	21.18	94.52	22.75	93.70	24.29	92.83	25.80
34	95.27	21.24	94.50	22.80	93.67	24.34	92.80	25.85
36	95.24	21.29	94.47	22.85	93.65	24.39	92.77	25.90
38	95.22	21.34	94.44	22.91	93.62	24.44	92.74	25.95
40	95.19	21.39	94.42	22.96	93.59	24.49	92.71	26.00
42	95.17	21.45	94.39	23.01	93.56	24.55	92.68	26.05
44	95.14	21.50	94.36	23.06	93.53	24.60	92.65	26.10
46	95.12	21.55	94.34	23.11	93.50	24.65	92.62	26.15
48	95.09	21.60	94.31	23.16	93.47	24.70	92.59	26.20
50	95.07	21.66	94.28	23.22	93.45	24.75	92.56	26.25
52	95.04	21.71	94.26	23.27	93.42	24.80	92.53	26.30
54	95.02	21.76	94.23	23.32	93.39	24.85	92.49	26.35
56	94.99	21.81	94.20	23.37	93.36	24.90	92.46	26.40
58	94.97	21.87	94.17	23.42	93.33	24.95	92.43	26.45
60	94.94	21.92	94.15	23.47	93.30	25.00	92.40	26.50
$c=0.75$	0.73	0.16	0.73	0.17	0.73	0.19	0.72	0.20
$c=1.00$	0.98	0.22	0.97	0.23	0.97	0.25	0.96	0.27
$c=1.25$	1.22	0.27	1.21	0.29	1.21	0.31	1.20	0.34



TABLE 27.—Horizontal distances and elevations from stadia readings—Continued.

Minutes.	16°.		17°.		18°.		19°.	
	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.
0	92.40	26.50	91.45	27.96	90.45	29.39	89.40	30.78
2	92.37	26.55	91.42	28.01	90.42	29.44	89.36	30.83
4	92.34	26.59	91.39	28.06	90.38	29.48	89.33	30.87
6	92.31	26.64	91.35	28.10	90.35	29.53	89.29	30.92
8	92.28	26.69	91.32	28.15	90.31	29.58	89.26	30.97
10	92.25	26.74	91.29	28.20	90.28	29.62	89.22	31.01
12	92.22	26.79	91.26	28.25	90.24	29.67	89.18	31.06
14	92.19	26.84	91.22	28.30	90.21	29.72	89.15	31.10
16	92.15	26.89	91.19	28.34	90.18	29.76	89.11	31.15
18	92.12	26.94	91.16	28.39	90.14	29.81	89.08	31.19
20	92.09	26.99	91.12	28.44	90.11	29.86	89.04	31.24
22	92.06	27.04	91.09	28.49	90.07	29.90	89.00	31.28
24	92.03	27.09	91.06	28.54	90.04	29.95	88.96	31.33
26	92.00	27.13	91.02	28.58	90.00	30.00	88.93	31.38
28	91.97	27.18	90.99	28.63	89.97	30.04	88.89	31.42
30	91.93	27.23	90.96	28.68	89.93	30.09	88.86	31.47
32	91.90	27.28	90.92	28.73	89.90	30.14	88.82	31.51
34	91.87	27.33	90.89	28.77	89.86	30.19	88.78	31.56
36	91.84	27.38	90.86	28.82	89.83	30.23	88.75	31.60
38	91.81	27.43	90.82	28.87	89.79	30.28	88.71	31.65
40	91.77	27.48	90.79	28.92	89.76	30.32	88.67	31.69
42	91.74	27.52	90.76	28.96	89.72	30.37	88.64	31.74
44	91.71	27.57	90.72	29.01	89.69	30.41	88.60	31.78
46	91.68	27.62	90.69	29.06	89.65	30.46	88.56	31.83
48	91.65	27.67	90.66	29.11	89.61	30.51	88.53	31.87
50	91.61	27.72	90.62	29.15	89.58	30.55	88.49	31.92
52	91.58	27.77	90.59	29.20	89.54	30.60	88.45	31.96
54	91.55	27.81	90.55	29.25	89.51	30.65	88.41	32.01
56	91.52	27.86	90.52	29.30	89.47	30.69	88.38	32.05
58	91.48	27.91	90.48	29.34	89.44	30.74	88.34	32.09
60	91.45	27.96	90.45	29.39	89.40	30.78	88.30	32.14
c=0.75	0.72	0.21	0.72	0.23	0.71	0.24	0.71	0.25
c=1.00	0.86	0.28	0.95	0.30	0.95	0.32	0.94	0.33
c=1.25	1.20	0.35	1.19	0.38	1.19	0.40	1.18	0.42

TABLE 27.—Horizontal distances and elevations from stadia readings—Continued.

Minutes.	20°.		21°.		22°.		23°.	
	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.	Horizon- tal dis- tances.	Difference of eleva- tion.
0	88.30	32.14	87.16	33.46	85.97	34.73	84.73	35.97
2	88.26	32.18	87.12	33.50	85.93	34.77	84.69	36.01
4	88.23	32.23	87.08	33.54	85.89	34.82	84.65	36.05
6	88.19	32.27	87.04	33.59	85.85	34.86	84.61	36.09
8	88.15	32.32	87.00	33.63	85.80	34.90	84.57	36.13
10	88.11	32.36	86.96	33.67	85.76	34.94	84.52	36.17
12	88.08	32.41	86.92	33.72	85.72	34.98	84.48	36.21
14	88.04	32.45	86.88	33.76	85.68	35.02	84.44	36.25
16	88.00	32.49	86.84	33.80	85.64	35.07	84.40	36.29
18	87.96	32.54	86.80	33.84	85.60	35.11	84.35	36.33
20	87.93	32.58	86.77	33.89	85.56	35.15	84.31	36.37
22	87.89	32.63	86.73	33.93	85.52	35.19	84.27	36.41
24	87.85	32.67	86.69	33.97	85.48	35.23	84.23	36.45
26	87.81	32.72	86.65	34.01	85.44	35.27	84.18	36.49
28	87.77	32.76	86.61	34.06	85.40	35.31	84.14	36.53
30	87.74	32.80	86.57	34.10	85.36	35.36	84.10	36.57
32	87.70	32.85	86.53	34.14	85.31	35.40	84.06	36.61
34	87.66	32.89	86.49	34.18	85.27	35.44	84.01	36.65
36	87.62	32.93	86.45	34.23	85.23	35.48	83.97	36.69
38	87.58	32.98	86.41	34.27	85.19	35.52	83.93	36.73
40	87.54	33.02	86.37	34.31	85.15	35.56	83.89	36.77
42	87.51	33.07	86.33	34.35	85.11	35.60	83.84	36.80
44	87.47	33.11	86.29	34.40	85.07	35.64	83.80	36.84
46	87.43	33.15	86.25	34.44	85.02	35.68	83.76	36.88
48	87.39	33.20	86.21	34.48	84.98	35.72	83.72	36.92
50	87.35	33.24	86.17	34.52	84.94	35.76	83.67	36.96
52	87.31	33.28	86.13	34.57	84.90	35.80	83.63	37.00
54	87.27	33.33	86.09	34.61	84.86	35.85	83.59	37.04
56	87.24	33.37	86.05	34.65	84.82	35.89	83.54	37.08
58	87.20	33.41	86.01	34.69	84.77	35.93	83.50	37.12
60	87.16	33.46	85.97	34.73	84.73	35.97	83.46	37.16
c=0.75	0.70	0.26	0.70	0.27	0.69	0.29	0.69	0.30
c=1.00	0.94	0.35	0.93	0.37	0.92	0.38	0.92	0.40
c=1.25	1.17	0.44	1.16	0.46	1.15	0.48	1.15	0.50

TABLE 27.—*Horizontal distances and elevations from stadia readings—Continued.*

Minutes.	24°.		25°.		26°.		27°.	
	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.	Horizontal distances.	Difference of elevation.
0	83.46	37.16	82.14	38.30	80.78	39.40	79.39	40.45
2	83.41	37.20	82.09	38.34	80.74	39.44	79.34	40.49
4	83.37	37.23	82.05	38.38	80.69	39.47	79.30	40.52
6	83.33	37.27	82.01	38.41	80.65	39.51	79.25	40.55
8	83.28	37.31	81.96	38.45	80.60	39.54	79.20	40.59
10	83.24	37.35	81.92	38.49	80.55	39.58	79.15	40.62
12	83.20	37.39	81.87	38.53	80.51	39.61	79.11	40.66
14	83.15	37.43	81.83	38.56	80.46	39.65	79.06	40.69
16	83.11	37.47	81.78	38.60	80.41	39.69	79.01	40.72
18	83.07	37.51	81.74	38.64	80.37	39.72	78.96	40.76
20	83.02	37.54	81.69	38.67	80.32	39.76	78.92	40.79
22	82.98	37.58	81.65	38.71	80.28	39.79	78.87	40.82
24	82.93	37.62	81.60	38.75	80.23	39.83	78.82	40.86
26	82.89	37.66	81.56	38.78	80.18	39.86	78.77	40.89
28	82.85	37.70	81.51	38.82	80.14	39.90	78.73	40.92
30	82.80	37.74	81.47	38.86	80.09	39.93	78.68	40.96
32	82.76	37.77	81.42	38.89	80.04	39.97	78.63	40.99
34	82.72	37.81	81.38	38.93	80.00	40.00	78.58	41.02
36	82.67	37.85	81.33	38.97	79.95	40.04	78.54	41.06
38	82.63	37.89	81.28	39.00	79.90	40.07	78.49	41.09
40	82.58	37.93	81.24	39.04	79.86	40.11	78.44	41.12
42	82.54	37.96	81.19	39.08	79.81	40.14	78.39	41.16
44	82.49	38.00	81.15	39.11	79.76	40.18	78.34	41.19
46	82.45	38.04	81.10	39.15	79.72	40.21	78.30	41.22
48	82.41	38.08	81.06	39.18	79.67	40.24	78.25	41.26
50	82.36	38.11	81.01	39.22	79.62	40.28	78.20	41.29
52	82.32	38.15	80.97	39.26	79.58	40.31	78.15	41.32
54	82.27	38.19	80.92	39.29	79.53	40.35	78.10	41.35
56	82.23	38.23	80.87	39.33	79.48	40.38	78.06	41.39
58	82.18	38.26	80.83	39.36	79.44	40.42	78.01	41.42
60	82.14	38.30	80.78	39.40	79.39	40.45	77.96	41.45
$c=0.75$	0.68	0.31	0.68	0.32	0.67	0.33	0.66	0.35
$c=1.00$	0.91	0.41	0.90	0.43	0.89	0.45	0.89	0.46
$c=1.25$	1.14	0.52	1.13	0.54	1.12	0.56	1.11	0.58

TABLE 27.—Horizontal distances and elevations from stadia readings—Continued.

Minutes.	28°.		29°.		30°.	
	Horizon- tal dis- tances.	Difference of eleva- tions.	Horizon- tal dis- tances.	Difference of eleva- tions.	Horizon- tal dis- tances.	Difference of eleva- tions.
0	77.96	41.45	76.50	42.40	75.00	43.30
2	77.91	41.48	76.45	42.43	74.95	43.33
4	77.86	41.52	76.40	42.46	74.90	43.36
6	77.81	41.55	76.35	42.49	74.85	43.39
8	77.77	41.58	76.30	42.53	74.80	43.42
10	77.72	41.61	76.25	42.56	74.75	43.45
12	77.67	41.65	76.20	42.59	74.70	43.47
14	77.62	41.68	76.15	42.62	74.65	43.50
16	77.57	41.71	76.10	42.65	74.60	43.53
18	77.52	41.74	76.05	42.68	74.55	43.56
20	77.48	41.77	76.00	42.71	74.49	43.59
22	77.42	41.81	75.95	42.74	74.44	43.62
24	77.38	41.84	75.90	42.77	74.39	43.65
26	77.33	41.87	75.85	42.80	74.34	43.67
28	77.28	41.90	75.80	42.83	74.29	43.70
30	77.23	41.93	75.75	42.86	74.24	43.73
32	77.18	41.97	75.70	42.89	74.19	43.76
34	77.13	42.00	75.65	42.92	74.14	43.79
36	77.09	42.03	75.60	42.95	74.09	43.82
38	77.04	42.06	75.55	42.98	74.04	43.84
40	76.99	42.09	75.50	43.01	73.99	43.87
42	76.94	42.12	75.45	43.04	73.93	43.90
44	76.89	42.15	75.40	43.07	73.88	43.93
46	76.84	42.19	75.35	43.10	73.83	43.95
48	76.79	42.22	75.30	43.13	73.78	43.98
50	76.74	42.25	75.25	43.16	73.73	44.01
52	76.69	42.28	75.20	43.18	73.68	44.04
54	76.64	42.31	75.15	43.21	73.63	44.07
56	76.59	42.34	75.10	43.24	73.58	44.09
58	76.55	42.37	75.05	43.27	73.52	44.12
60	76.50	42.40	75.00	43.30	73.47	44.15
$r=0.75$	0.66	0.36	0.65	0.37	0.65	0.38
$r=1.00$	0.88	0.48	0.87	0.49	0.86	0.51
$r=1.25$	1.10	0.60	1.09	0.62	1.08	0.64

TABLE 28.—For converting metric into United States measures.

LINEAR

Meters.	Inches.	Meters.	Feet.	Meters.	Yards.	Kilo-meters.	Miles.
1	39. 3700	1	3. 280833	1	1. 093611	1	0. 62137
2	78. 7400	2	6. 561667	2	2. 187222	2	1. 24274
3	118. 1100	3	9. 842500	3	3. 280833	3	1. 86411
4	157. 4800	4	13. 123333	4	4. 374444	4	2. 48548
5	196. 8500	5	16. 404166	5	5. 468056	5	3. 10685
6	236. 2200	6	19. 685000	6	6. 561667	6	3. 72822
7	275. 5900	7	22. 965833	7	7. 655278	7	4. 34959
8	314. 9600	8	26. 246666	8	8. 748889	8	4. 97096
9	354. 3300	9	29. 527500	9	9. 842500	9	5. 59233

SQUARE.

Square centi-meters.	Square inches.	Square meters.	Square feet.	Square meters.	Square yards.	Hec-tares.	Acres.
1	0. 1550	1	10. 764	1	1. 196	1	2. 471
2	0. 3100	2	21. 528	2	2. 392	2	4. 942
3	0. 4650	3	32. 292	3	3. 588	3	7. 413
4	0. 6200	4	43. 055	4	4. 784	4	9. 884
5	0. 7750	5	53. 819	5	5. 980	5	12. 355
6	0. 9300	6	64. 583	6	7. 176	6	14. 826
7	1. 0850	7	75. 347	7	8. 372	7	17. 297
8	1. 2400	8	86. 111	8	9. 568	8	19. 768
9	1. 3950	9	96. 875	9	10. 764	9	22. 239

TABLE 29.—*For converting United States measures into metric.*

LINEAR.

Inches.	Milli- meters.	Feet.	Meters.	Yards.	Meters.	Miles.	Kilo- meters.
1	25. 4001	1	0. 304801	1	0. 914402	1	1. 60935
2	50. 8001	2	0. 609601	2	1. 828804	2	3. 21869
3	76. 2002	3	0. 914402	3	2. 743205	3	4. 82804
4	101. 6002	4	1. 219202	4	3. 657607	4	6. 43739
5	127. 0003	5	1. 524003	5	4. 572009	5	8. 04674
6	152. 4003	6	1. 828804	6	5. 486411	6	9. 65608
7	177. 8004	7	2. 133604	7	6. 400813	7	11. 26543
8	203. 2004	8	2. 438405	8	7. 315215	8	12. 87478
9	228. 6005	9	2. 743205	9	8. 229616	9	14. 48412

SQUARE.

Square inches.	Square centi- meters.	Square feet.	Square deci- meters.	Square yards.	Square meters.	Acres.	Hec- tares.
1	6. 452	1	9. 290	1	0. 836	1	0. 4047
2	12. 903	2	18. 581	2	1. 672	2	0. 8094
3	19. 355	3	27. 871	3	2. 508	3	1. 2141
4	25. 807	4	37. 161	4	3. 344	4	1. 6187
5	32. 258	5	46. 452	5	4. 181	5	2. 0234
6	38. 710	6	55. 742	6	5. 017	6	2. 4281
7	45. 161	7	65. 032	7	5. 853	7	2. 8328
8	51. 613	8	74. 323	8	6. 689	8	3. 2375
9	58. 065	9	83. 613	9	7. 525	9	3. 6422

TABLE 30.—FOR INTERCONVERSION OF MILES AND LOGARITHMS OF METERS, FOR DISTANCES FROM 10 TO 100 MILES.

The value adopted for the meter is 39.3700 inches. Distances between triangulation stations are given in logarithms of meters, but for general use distances in miles are most frequently desired.

The following examples illustrate use of the table:

To find the number of miles corresponding to log. distance in meters ..... 4. 56857  
Next lower log. in table is for 23.00 miles ..... 4. 56838

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Difference ..... 19

Corresponding to tabular difference for 0.01 mile.  
Hence distance required is 23.01 miles.

For distances less than 10 miles proceed as above; first adding 1 to the characteristic of the given logarithm and afterwards dividing the corresponding number of miles by 10. Example:

Having given the log. 3.84062, which is less than any given in the table, and therefore for a distance less than 10 miles, adding 1 to the characteristic of the logarithm gives 4.84062, which corresponds to a distance of 43.05 miles. Hence the distance sought is

43.05  
— = 4.305 miles.  
10

To change—

	(Add.)
Log. of miles to log. of meters.....	3. 2066498
Log. of yards to log. of meters .....	9. 9611371
Log. of feet to log. of meters .....	9. 4840158
Log. of inches to log. of meters.....	8. 4048346
Log. of meters to log. of miles.....	6. 7933502
Log. of meters to log. of yards .....	0. 0388629
Log. of meters to log. of feet .....	0. 5159842
Log. of meters to log. of inches.....	1. 5951654

TABLE 30.—For interconversion of miles and logarithms of meters.

[Prepared by S. S. Gannett.]

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
10. 00	4. 20665	43	10. 50	4. 22784	41	11. 00	4. 24804	39
. 05	4. 20882		. 55	4. 22990		. 05	4. 25001	
. 10	4. 21097		. 60	4. 23196		. 10	4. 25197	
. 15	4. 21312		. 65	4. 23400		. 15	4. 25393	
. 20	4. 21525	42	. 70	4. 23603		. 20	4. 25587	
. 25	4. 21737		. 75	4. 23806	40	. 25	4. 25780	
. 30	4. 21949		. 80	4. 24007		. 30	4. 25973	38
. 35	4. 22159		. 85	4. 24208		. 35	4. 26165	
. 40	4. 22368		. 90	4. 24408		. 40	4. 26355	
. 45	4. 22577	41	. 95	4. 24606		. 45	4. 26545	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
11.50	4.26735	38	14.00	4.35278	31	16.50	4.42413	26
.55	4.26923		.05	4.35433		.55	4.42545	
.60	4.27111	37	.10	4.35587		.60	4.42676	
.65	4.27298		.15	4.35741		.65	4.42806	
.70	4.27484		.20	4.35894		.70	4.42937	
.75	4.27669		.25	4.36047	30	.75	4.43067	
.80	4.27853		.30	4.36199		.80	4.43196	
.85	4.28037		.35	4.36350		.85	4.43325	
.90	4.28220	36	.40	4.36501		.90	4.43454	
.95	4.28402		.45	4.36652		.95	4.43582	
12.00	4.28583		.50	4.36802		17.00	4.43710	25
.05	4.28764		.55	4.36951		.05	4.43837	
.10	4.28944		.60	4.37100		.10	4.43964	
.15	4.29123		.65	4.37249		.15	4.44091	
.20	4.29301		.70	4.37397	29	.20	4.44218	
.25	4.29479	35	.75	4.37544		.25	4.44344	
.30	4.29656		.80	4.37691		.30	4.44470	
.35	4.29832		.85	4.37838		.35	4.44595	
.40	4.30007		.90	4.37984		.40	4.44720	
.45	4.30182		.95	4.38129		.45	4.44845	
.50	4.30356		15.00	4.38274		.50	4.44969	
.55	4.30529		.05	4.39419		.55	4.45093	
.60	4.30702	34	.10	4.38563		.60	4.45216	
.65	4.30874		.15	4.38706		.65	4.45339	
.70	4.31046		.20	4.38849		.70	4.45462	
.75	4.31216		.25	4.38992	28	.75	4.45585	24
.80	4.31386		.30	4.39134		.80	4.45707	
.85	4.31555		.35	4.39276		.85	4.45829	
.90	4.31724		.40	4.39417		.90	4.45950	
.95	4.31892	33	.45	4.39558		.95	4.46071	
13.00	4.32059		.50	4.39698		18.00	4.46192	
.05	4.32226		.55	4.39838		.05	4.46313	
.10	4.32392		.60	4.39977		.10	4.46433	
.15	4.32558		.65	4.40116		.15	4.46553	
.20	4.32722		.70	4.40255		.20	4.46672	
.25	4.32887		.75	4.40393		.25	4.46791	
.30	4.33050		.80	4.40531	27	.30	4.46910	
.35	4.33213	32	.85	4.40668		.35	4.47029	
.40	4.33375		.90	4.40805		.40	4.47147	
.45	4.33537		.95	4.40941		.45	4.47265	23
.50	4.33698		16.00	4.41077		.50	4.47382	
.55	4.33859		.05	4.41213		.55	4.47499	
.60	4.34019		.10	4.41348		.60	4.47616	
.65	4.34178		.15	4.41482		.65	4.47733	
.70	4.34337		.20	4.41616		.70	4.47849	
.75	4.34495		.25	4.41750		.75	4.47965	
.80	4.34653	31	.30	4.41884		.80	4.48081	
.85	4.34810		.35	4.42017	26	.85	4.48196	
.90	4.34966		.40	4.42149		.90	4.48311	
.95	4.35122		.45	4.42282		.95	4.48426	



TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log .01 mile.	Miles.	Log. meters.	Diff. log .01 mile.	Miles.	Log. meters.	Diff. log .01 mile.
19.00	4.48540	23	21.50	4.53909	20	24.00	4.58686	18
.05	4.48654		.55	4.54010		.05	4.58777	
.10	4.48768		.60	4.54110		.10	4.58867	
.15	4.48882		.65	4.54211		.15	4.58957	
.20	4.48995		.70	4.54311		.20	4.59047	
.25	4.49108	22	.75	4.54411		.25	4.59136	
.30	4.49221		.80	4.54511		.30	4.59226	
.35	4.49333		.85	4.54610		.35	4.59315	
.40	4.49445		.90	4.54709		.40	4.59404	
.45	4.49557		.95	4.54808		.45	4.59493	
.50	4.49669		22.00	4.54907		.50	4.59582	
.55	4.49780		.05	4.55006		.55	4.59670	
.60	4.49891		.10	4.55104		.60	4.59759	
.65	4.50001		.15	4.55202		.65	4.59847	
.70	4.50112		.20	4.55300		.70	4.59935	
.75	4.50222		.25	4.55398	19	.75	4.60023	
.80	4.50332		.30	4.55495		.80	4.60110	
.85	4.50441		.35	4.55593		.85	4.60198	
.90	4.50550		.40	4.55690		.90	4.60285	17
.95	4.50659		.45	4.55787		.95	4.60372	
20.00	4.50768		.50	4.55883		25.00	4.60459	
.05	4.50876		.55	4.55980		.05	4.60546	
.10	4.50985		.60	4.56076		.10	4.60632	
.15	4.51093		.65	4.56172		.15	4.60719	
.20	4.51200		.70	4.56268		.20	4.60805	
.25	4.51308	21	.75	4.56363		.25	4.60891	
.30	4.51415		.80	4.56459		.30	4.60977	
.35	4.51521		.85	4.56554		.35	4.61063	
.40	4.51628		.90	4.56649		.40	4.61148	
.45	4.51734		.95	4.56743		.45	4.61234	
.50	4.51840		23.00	4.56838		.50	4.61319	
.55	4.51946		.05	4.56932		.55	4.61404	
.60	4.52052		.10	4.57026		.60	4.61489	
.65	4.52157		.15	4.57120		.65	4.61574	
.70	4.52262		.20	4.57214		.70	4.61658	
.75	4.52367		.25	4.57307	18	.75	4.61743	
.80	4.52471		.30	4.57401		.80	4.61827	
.85	4.52576		.35	4.57494		.85	4.61911	
.90	4.52680		.40	4.57587		.90	4.61995	
.95	4.52783		.45	4.57679		.95	4.62079	
21.00	4.52887		.50	4.57772		26.00	4.62162	
.05	4.52990		.55	4.57864		.05	4.62246	
.10	4.53093		.60	4.57956		.10	4.62329	
.15	4.53196		.65	4.58048		.15	4.62412	
.20	4.53299		.70	4.58140		.20	4.62495	
.25	4.53401	20	.75	4.58231		.25	4.62578	16
.30	4.53503		.80	4.58323		.30	4.62661	
.35	4.53605		.85	4.58414		.35	4.62743	
.40	4.53706		.90	4.58505		.40	4.62825	
.45	4.53808		.95	4.58596		.45	4.62908	

TABLE 30 — *For interconversion of miles and logarithms of meters—Continued.*

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
26.50	4.62990	16	29.00	4.66905	15	31.50	4.70496	14
.55	4.63071		.05	4.66980		.55	4.70565	
.60	4.63153		.10	4.67054		.60	4.70634	
.65	4.63235		.15	4.67129		.65	4.70702	
.70	4.63316		.20	4.67203		.70	4.70771	
.75	4.63397		.25	4.67278		.75	4.70839	
.80	4.63479		.30	4.67352		.80	4.70908	
.85	4.63559		.35	4.67426		.85	4.70976	
.90	4.63640		.40	4.67500		.90	4.71044	
.95	4.63721		.45	4.67573		.95	4.71112	
27.00	4.63801		.50	4.67647		32.00	4.71180	13
.05	4.63882		.55	4.67721		.05	4.71248	
.10	4.63962		.60	4.67794		.10	4.71315	
.15	4.64042		.65	4.67867		.15	4.71383	
.20	4.64122		.70	4.67941		.20	4.71451	
.25	4.64202		.75	4.68014		.25	4.71518	
.30	4.64281		.80	4.68087		.30	4.71585	
.35	4.64361		.85	4.68159		.35	4.71652	
.40	4.64440		.90	4.68232		.40	4.71719	
.45	4.64519		.95	4.68305		.45	4.71787	
.50	4.64598		30.00	4.68377	14	.50	4.71853	
.55	4.64677		.05	4.68449		.55	4.71920	
.60	4.64756		.10	4.68522		.60	4.71987	
.65	4.64835		.15	4.68594		.65	4.72053	
.70	4.64913		.20	4.68666		.70	4.72120	
.75	4.64991		.25	4.68737		.75	4.72186	
.80	4.65069		.30	4.68809		.80	4.72252	
.85	4.65147		.35	4.68881		.85	4.72319	
.90	4.65225		.40	4.68952		.90	4.72385	
.95	4.65303		.45	4.69024		.95	4.72451	
28.00	4.65381	15	.50	4.69095		33.00	4.72516	
.05	4.65458		.55	4.69168		.05	4.72582	
.10	4.65536		.60	4.69237		.10	4.72648	
.15	4.65613		.65	4.69308		.15	4.72713	
.20	4.65690		.70	4.69379		.20	4.72779	
.25	4.65767		.75	4.69449		.25	4.72844	
.30	4.65844		.80	4.69520		.30	4.72909	
.35	4.65920		.85	4.69590		.35	4.72975	
.40	4.65997		.90	4.69661		.40	4.73040	
.45	4.66073		.95	4.69731		.45	4.73105	
.50	4.66149		31.00	4.69801		.50	4.73169	
.55	4.66226		.05	4.69871		.55	4.73234	
.60	4.66302		.10	4.69941		.60	4.73299	
.65	4.66377		.15	4.70011		.65	4.73363	
.70	4.66453		.20	4.70081		.70	4.73428	
.75	4.66529		.25	4.70150		.75	4.73492	
.80	4.66604		.30	4.70219		.80	4.73557	
.85	4.66680		.35	4.70289		.85	4.73621	
.90	4.66755		.40	4.70358		.90	4.73685	
.95	4.66830		.45	4.70427		.95	4.73749	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
34.00	4.73813	13	36.50	4.76894	12	39.00	4.79771	11
.05	4.73877		.55	4.76954		.05	4.79727	
.10	4.73940		.60	4.77013		.10	4.79883	
.15	4.74004		.65	4.77072		.15	4.79938	
.20	4.74068		.70	4.77132		.20	4.79994	
.25	4.74131		.75	4.77191		.25	4.80049	
.30	4.74194		.80	4.77250		.30	4.80104	
.35	4.74258		.85	4.77309		.35	4.80159	
.40	4.74321		.90	4.77368		.40	4.80215	
.45	4.74384		.95	4.77426		.45	4.80270	
.50	4.74447		37.00	4.77485		.50	4.80325	
.55	4.74510		.05	4.77544		.55	4.80380	
.60	4.74573		.10	4.77602		.60	4.80435	
.65	4.74635	12	.15	4.77661	11	.65	4.80489	10
.70	4.74698		.20	4.77719		.70	4.80544	
.75	4.74761		.25	4.77778		.75	4.80599	
.80	4.74823		.30	4.77836		.80	4.80653	
.85	4.74885		.35	4.77894		.85	4.80708	
.90	4.74947		.40	4.77952		.90	4.80762	
.95	4.75010		.45	4.78010		.95	4.80817	
35.00	4.75072		.50	4.78068		40.00	4.80871	
.05	4.75134		.55	4.78126		.05	4.80925	
.10	4.75196		.60	4.78184		.10	4.80979	
.15	4.75257		.65	4.78241		.15	4.81034	
.20	4.75319		.70	4.78299		.20	4.81088	
.25	4.75381	11	.75	4.78357	10	.25	4.81142	9
.30	4.75443		.80	4.78414		.30	4.81195	
.35	4.75504		.85	4.78472		.35	4.81249	
.40	4.75565		.90	4.78529		.40	4.81303	
.45	4.75627		.95	4.78586		.45	4.81357	
.50	4.75688		38.00	4.78643		.50	4.81411	
.55	4.75749		.05	4.78701		.55	4.81464	
.60	4.75810		.10	4.78758		.60	4.81518	
.65	4.75871		.15	4.78815		.65	4.81571	
.70	4.75932		.20	4.78871		.70	4.81624	
.75	4.75993		.25	4.78928		.75	4.81677	
.80	4.76053		.30	4.78985		.80	4.81731	
.85	4.76114		.35	4.79041		.85	4.81784	
.90	4.76174		.40	4.79098		.90	4.81837	
.95	4.76235		.45	4.79155		.95	4.81890	
36.00	4.76295	10	.50	4.79211	9	41.00	4.81943	8
.05	4.76355		.55	4.79267		.05	4.81996	
.10	4.76416		.60	4.79324		.10	4.82049	
.15	4.76476		.65	4.79380		.15	4.82102	
.20	4.76536		.70	4.79436		.20	4.82155	
.25	4.76596		.75	4.79592		.25	4.82207	
.30	4.76656		.80	4.79548		.30	4.82260	
.35	4.76715		.85	4.79604		.35	4.82313	
.40	4.76775		.90	4.79660		.40	4.82365	
.45	4.76835		.95	4.79716		.45	4.82417	

TABLE 30.—*For interconversion of miles and logarithms of meters—Continued.*

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
41.50	4.82470	10	44.00	4.85010	10	46.50	4.87410	9
.55	4.82522		.05	4.85060		.55	4.87457	
.60	4.82574		.10	4.85109		.60	4.87504	
.65	4.82627		.15	4.85158		.65	4.87550	
.70	4.82679		.20	4.85207		.70	4.87597	
.75	4.82731		.25	4.85256		.75	4.87643	
.80	4.82783		.30	4.85305		.80	4.87690	
.85	4.82835		.35	4.85354		.85	4.87736	
.90	4.82886		.40	4.85403		.90	4.87782	
.95	4.82938		.45	4.85452		.95	4.87829	
42.00	4.82990		.50	4.85501		47.00	4.87875	
.05	4.83042		.55	4.85550		.05	4.87921	
.10	4.83093		.60	4.85599		.10	4.87967	
.15	4.83145		.65	4.85647		.15	4.88013	
.20	4.83196		.70	4.85696		.20	4.88059	
.25	4.83248		.75	4.85744		.25	4.88105	
.30	4.83299		.80	4.85793		.30	4.88151	
.35	4.83350		.85	4.85841		.35	4.88197	
.40	4.83402		.90	4.85890		.40	4.88243	
.45	4.83453		.95	4.85938		.45	4.88289	
.50	4.83504		45.00	4.85986		.50	4.88334	
.55	4.83555		.05	4.86035		.55	4.88380	
.60	4.83606		.10	4.86083		.60	4.88326	
.65	4.83657		.15	4.86131		.65	4.88471	
.70	4.83708		.20	4.86179		.70	4.88517	
.75	4.83759		.25	4.86227		.75	4.88562	
.80	4.83809		.30	4.86275		.80	4.88608	
.85	4.83860		.35	4.86323		.85	4.88653	
.90	4.83911		.40	4.86371		.90	4.88699	
.95	4.83961		.45	4.86418		.95	4.88744	
43.00	4.84012		.50	4.86466		48.00	4.88789	
.05	4.84062		.55	4.86514		.05	4.88834	
.10	4.84113		.60	4.86561		.10	4.88879	
.15	4.84163		.65	4.86609		.15	4.88925	
.20	4.84213		.70	4.86657		.20	4.88970	
.25	4.84264		.75	4.86704		.25	4.89015	
.30	4.84314		.80	4.86751		.30	4.89060	
.35	4.84364		.85	4.86799		.35	4.89105	
.40	4.84414		.90	4.86846		.40	4.89149	
.45	4.84464		.95	4.86894		.45	4.89194	
.50	4.84514		46.00	4.86941	9	.50	4.89239	
.55	4.84564		.05	4.86988		.55	4.89284	
.60	4.84614		.10	4.87035		.60	4.89329	
.65	4.84663		.15	4.87082		.65	4.89373	
.70	4.84713		.20	4.87129		.70	4.89418	
.75	4.84763		.25	4.87176		.75	4.89462	
.80	4.84812		.30	4.87223		.80	4.89507	
.85	4.84862		.35	4.87270		.85	4.89551	
.90	4.84911		.40	4.87317		.90	4.89596	
.95	4.84961		.45	4.87364		.95	4.89640	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. 0.1 mile.	Miles.	Log. meters.	Diff. log. 0.1 mile.	Miles.	Log. meters.	Diff. log. 0.1 mile.
49.00	4.89685	9	51.50	4.91846	8	54.00	4.93904	8
.05	4.89729		.55	4.91888		.05	4.93945	
.10	4.89773		.60	4.91930		.10	4.93985	
.15	4.89817		.65	4.91972		.15	4.94025	
.20	4.89861		.70	4.92014		.20	4.94065	
.25	4.89906		.75	4.92056		.25	4.94105	
.30	4.89950		.80	4.92098		.30	4.94145	
.35	4.89994		.85	4.92140		.35	4.94185	
.40	4.90038		.90	4.92182		.40	4.94225	
.45	4.90082		.95	4.92224		.45	4.94265	
.50	4.90125		52.00	4.92265		.50	4.94305	
.55	4.90169		.05	4.92307		.55	4.94345	
.60	4.90213		.10	4.92349		.60	4.94384	
.65	4.90257		.15	4.92390		.65	4.94424	
.70	4.90301		.20	4.92432		.70	4.94464	
.75	4.90344		.25	4.92474		.75	4.94503	
.80	4.90388		.30	4.92515		.80	4.94543	
.85	4.90431		.35	4.92557		.85	4.94583	
.90	4.90475		.40	4.92598		.90	4.94622	
.95	4.90519		.45	4.92639		.95	4.94662	
50.00	4.90562		.50	4.92681		55.00	4.94701	
.05	4.90605		.55	4.92722		.05	4.94741	
.10	4.90649		.60	4.92764		.10	4.94780	
.15	4.90692		.65	4.92805		.15	4.94820	
.20	4.90735		.70	4.92846		.20	4.94859	
.25	4.90779		.75	4.92887		.25	4.94898	
.30	4.90822		.80	4.92928		.30	4.94937	
.35	4.90865		.85	4.92969		.35	4.94977	
.40	4.90908		.90	4.93011		.40	4.95016	
.45	4.90951		.95	4.93052		.45	4.95055	
.50	4.90994		53.00	4.93093		.50	4.95094	
.55	4.91037		.05	4.93133		.55	4.95133	
.60	4.91080		.10	4.93175		.60	4.95172	
.65	4.91123		.15	4.93215		.65	4.95212	
.70	4.91166		.20	4.93256		.70	4.95251	
.75	4.91209		.25	4.93297		.75	4.95289	
.80	4.91251		.30	4.93338		.80	4.95328	
.85	4.91294		.35	4.93378		.85	4.95367	
.90	4.91337		.40	4.93419		.90	4.95406	
.95	4.91379		.45	4.93460		.95	4.95445	
51.00	4.91422		.50	4.93500		56.00	4.95484	
.05	4.91465		.55	4.93541		.05	4.95523	
.10	4.91507		.60	4.93581		.10	4.95561	
.15	4.91550		.65	4.93622		.15	4.95600	
.20	4.91592		.70	4.93662		.20	4.95639	
.25	4.91634		.75	4.93703		.25	4.95677	
.30	4.91677		.80	4.93743		.30	4.95716	
.35	4.91719		.85	4.93784		.35	4.95754	
.40	4.91761		.90	4.93824		.40	4.95793	
.45	4.91803		.95	4.93864		.45	4.95831	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
56.50	4.95870	8	59.00	4.97750	7	61.50	4.99553	7
.55	4.95908		.05	4.97787		.55	4.99588	
.60	4.95947		.10	4.97824		.60	4.99623	
.65	4.95985		.15	4.97861		.65	4.99658	
.70	4.96023		.20	4.97897		.70	4.99693	
.75	4.96062		.25	4.97934		.75	4.99729	
.80	4.96100		.30	4.97971		.80	4.99764	
.85	4.96138		.35	4.98007		.85	4.99799	
.90	4.96176		.40	4.98044		.90	4.99834	
.95	4.96214		.45	4.98080		.95	4.99869	
57.00	4.96253	7	.50	4.98117		62.00	4.99904	
.05	4.96291		.55	4.98153		.05	4.99939	
.10	4.96329		.60	4.98190		.10	4.99974	
.15	4.96367		.65	4.98226		.15	5.00009	
.20	4.96405		.70	4.98262		.20	5.00044	
.25	4.96443		.75	4.98299		.25	5.00079	
.30	4.96481		.80	4.98335		.30	5.00114	
.35	4.96518		.85	4.98371		.35	5.00149	
.40	4.96556		.90	4.98408		.40	5.00183	
.45	4.96594		.95	4.98444		.45	5.00218	
.50	4.96632		60.00	4.98480		.50	5.00253	
.55	4.96669		.05	4.98516		.55	5.00288	
.60	4.96707		.10	4.98552		.60	5.00322	
.65	4.96745		.15	4.98589		.65	5.00357	
.70	4.96783		.20	4.98625		.70	5.00392	
.75	4.96820		.25	4.98661		.75	5.00426	
.80	4.96858		.30	4.98697		.80	5.00461	
.85	4.96895		.35	4.98733		.85	5.00495	
.90	4.96933		.40	4.98769		.90	5.00530	
.95	4.96970		.45	4.98805		.95	5.00565	
58.00	4.97008		.50	4.98841		63.00	5.00599	
.05	4.97045		.55	4.98876		.05	5.00633	
.10	4.97083		.60	4.98912		.10	5.00668	
.15	4.97120		.65	4.98948		.15	5.00702	
.20	4.97157		.70	4.98984		.20	5.00737	
.25	4.97195		.75	4.99020		.25	5.00771	
.30	4.97232		.80	4.99055		.30	5.00805	
.35	4.97269		.85	4.99091		.35	5.00840	
.40	4.97306		.90	4.99127		.40	5.00874	
.45	4.97343		.95	4.99162		.45	5.00908	
.50	4.97381		61.00	4.99198		.50	5.00942	
.55	4.97418		.05	4.99234		.55	5.00977	
.60	4.97455		.10	4.99269		.60	5.01011	
.65	4.97492		.15	4.99305		.65	5.01045	
.70	4.97529		.20	4.99340		.70	5.01079	
.75	4.97566		.25	4.99376		.75	5.01113	
.80	4.97603		.30	4.99411		.80	5.01147	
.85	4.97640		.35	4.99447		.85	5.01181	
.90	4.97677		.40	4.99482		.90	5.01215	
.95	4.97713		.45	4.99517		.95	5.01249	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
64.00	5.01283	7	66.50	5.02947	7	69.00	5.04550	6
.05	5.01317		.55	5.02980		.05	5.04581	
.10	5.01351		.60	5.03012		.10	5.04613	
.15	5.01385		.65	5.03045		.15	5.04644	
.20	5.01419		.70	5.03078		.20	5.04676	
.25	5.01452		.75	5.03110		.25	5.04707	
.30	5.01486		.80	5.03143		.30	5.04738	
.35	5.01520		.85	5.03175		.35	5.04770	
.40	5.01554		.90	5.03208		.40	5.04801	
.45	5.01587		.95	5.03241		.45	5.04832	
.50	5.01621		67.00	5.03273	6	.50	5.04863	
.55	5.01655		.05	5.03305		.55	5.04895	
.60	5.01688		.10	5.03337		.60	5.04926	
.65	5.01722		.15	5.03370		.65	5.04957	
.70	5.01755		.20	5.03402		.70	5.04988	
.75	5.01789		.25	5.03434		.75	5.05019	
.80	5.01823		.30	5.03467		.80	5.05051	
.85	5.01856		.35	5.03499		.85	5.05082	
.90	5.01889		.40	5.03531		.90	5.05113	
.95	5.01923		.45	5.03563		.95	5.05144	
65.00	5.01956		.50	5.03595		70.00	5.05175	
.05	5.01990		.55	5.03627		.05	5.05206	
.10	5.02023		.60	5.03660		.10	5.05237	
.15	5.02056		.65	5.03692		.15	5.05268	
.20	5.02090		.70	5.03724		.20	5.05299	
.25	5.02123		.75	5.03756		.25	5.05330	
.30	5.02156		.80	5.03788		.30	5.05361	
.35	5.02190		.85	5.03820		.35	5.05391	
.40	5.02223		.90	5.03852		.40	5.05422	
.45	5.02256		.95	5.03884		.45	5.05453	
.50	5.02289		68.00	5.03916		.50	5.05484	
.55	5.02322		.05	5.03948		.55	5.05515	
.60	5.02355		.10	5.03980		.60	5.05545	
.65	5.02389		.15	5.04012		.65	5.05576	
.70	5.02421		.20	5.04043		.70	5.05607	
.75	5.02455		.25	5.04075		.75	5.05538	
.80	5.02488		.30	5.04107		.80	5.05568	
.85	5.02521		.35	5.04139		.85	5.05599	
.90	5.02554		.40	5.04171		.90	5.05730	
.95	5.02587		.45	5.04202		.95	5.05760	
66.00	5.02619		.50	5.04234		71.00	5.05791	
.05	5.02652		.55	5.04266		.05	5.05821	
.10	5.02685		.60	5.04297		.10	5.05852	
.15	5.02718		.65	5.04329		.15	5.05883	
.20	5.02751		.70	5.04361		.20	5.05913	
.25	5.02784		.75	5.04392		.25	5.05943	
.30	5.02816		.80	5.04424		.30	5.05974	
.35	5.02849		.85	5.04455		.35	5.06004	
.40	5.02882		.90	5.04487		.40	5.06035	
.45	5.02915		.95	5.04518		.45	5.06065	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
71.50	5.06096	6	74.00	5.07588	6	76.50	5.09031	6
.55	5.06126		.05	5.07617		.55	5.09059	
.60	5.06156		.10	5.07647		.60	5.09088	
.65	5.06187		.15	5.07676		.65	5.09117	
.70	5.06217		.20	5.07705		.70	5.09145	
.75	5.06247		.25	5.07735		.75	5.09173	
.80	5.06277		.30	5.07764		.80	5.09201	
.85	5.06308		.35	5.07793		.85	5.09229	
.90	5.06338		.40	5.07822		.90	5.09258	
.95	5.06368		.45	5.07851		.95	5.09286	
72.00	5.06398		.50	5.07881		77.00	5.09314	
.05	5.06428		.55	5.07910		.05	5.09342	
.10	5.06459		.60	5.07939		.10	5.09370	
.15	5.06489		.65	5.07968		.15	5.09399	
.20	5.06519		.70	5.07997		.20	5.09427	
.25	5.06549		.75	5.08026		.25	5.09455	
.30	5.06579		.80	5.08055		.30	5.09483	
.35	5.06609		.85	5.08084		.35	5.09511	
.40	5.06639		.90	5.08113		.40	5.09539	
.45	5.06669		.95	5.08142		.45	5.09567	
.50	5.06699		75.00	5.08171		.50	5.09595	
.55	5.06729		.05	5.08200		.55	5.09623	
.60	5.06759		.10	5.08229		.60	5.09651	
.65	5.06789		.15	5.08258		.65	5.09679	
.70	5.06818		.20	5.08287		.70	5.09707	
.75	5.06848		.25	5.08316		.75	5.09735	
.80	5.06878		.30	5.08345		.80	5.09763	
.85	5.06908		.35	5.08373		.85	5.09791	
.90	5.06938		.40	5.08402		.90	5.09819	
.95	5.06967		.45	5.08431		.95	5.09847	
73.00	5.06997		.50	5.08460		78.00	5.09875	
.05	5.07027		.55	5.08488		.05	5.09902	
.10	5.07057		.60	5.08517		.10	5.09930	
.15	5.07086		.65	5.08546		.15	5.09958	
.20	5.07116		.70	5.08575		.20	5.09986	
.25	5.07146		.75	5.08603		.25	5.10013	
.30	5.07175		.80	5.08632		.30	5.10041	
.35	5.07205		.85	5.08661		.35	5.10069	
.40	5.07235		.90	5.08689		.40	5.10097	
.45	5.07264		.95	5.08718		.45	5.10124	
.50	5.07294		76.00	5.08746		.50	5.10152	
.55	5.07323		.05	5.08775		.55	5.10180	
.60	5.07353		.10	5.08803		.60	5.10207	
.65	5.07382		.15	5.08832		.65	5.10235	
.70	5.07412		.20	5.08861		.70	5.10263	
.75	5.07441		.25	5.08889		.75	5.10290	
.80	5.07471		.30	5.08917		.80	5.10318	
.85	5.07500		.35	5.08946		.85	5.10345	
.90	5.07529		.40	5.08974		.90	5.10373	
.95	5.07559		.45	5.09003		.95	5.10400	



TABLE 30. --For interconversion of miles and logarithms of meters--Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
79.00	5.10428	5	81.50	5.11781	5	84.00	5.13083	5
.05	5.10455		.55	5.11807		.05	5.13119	
.10	5.10483		.60	5.11834		.10	5.13145	
.15	5.10510		.65	5.11861		.15	5.13170	
.20	5.10537		.70	5.11887		.20	5.13196	
.25	5.10565		.75	5.11913		.25	5.13222	
.30	5.10592		.80	5.11940		.30	5.13248	
.35	5.10620		.85	5.11967		.35	5.13273	
.40	5.10647		.90	5.11993		.40	5.13299	
.45	5.10674		.95	5.12020		.45	5.13325	
.50	5.10702		82.00	5.12048		.50	5.13351	
.55	5.10729		.05	5.12073		.55	5.13376	
.60	5.10756		.10	5.12099		.60	5.13402	
.65	5.10784		.15	5.12126		.65	5.13428	
.70	5.10811		.20	5.12152		.70	5.13453	
.75	5.10838		.25	5.12179		.75	5.13479	
.80	5.10865		.30	5.12205		.80	5.13505	
.85	5.10893		.35	5.12231		.85	5.13530	
.90	5.10920		.40	5.12258		.90	5.13556	
.95	5.10947		.45	5.12284		.95	5.13581	
80.00	5.10974		.50	5.12310		85.00	5.13607	
.05	5.11001		.55	5.12337		.05	5.13632	
.10	5.11028		.60	5.12363		.10	5.13658	
.15	5.11055		.65	5.12389		.15	5.13683	
.20	5.11082		.70	5.12416		.20	5.13709	
.25	5.11109		.75	5.12442		.25	5.13734	
.30	5.11137		.80	5.12468		.30	5.13760	
.35	5.11164		.85	5.12494		.35	5.13785	
.40	5.11191		.90	5.12521		.40	5.13811	
.45	5.11218		.95	5.12547		.45	5.13836	
.50	5.11245		83.00	5.12573		.50	5.13862	
.55	5.11272		.05	5.12599		.55	5.13887	
.60	5.11299		.10	5.12625		.60	5.13912	
.65	5.11325		.15	5.12651		.65	5.13938	
.70	5.11352		.20	5.12677		.70	5.13963	
.75	5.11379		.25	5.12703		.75	5.13988	
.80	5.11406		.30	5.12729		.80	5.14014	
.85	5.11433		.35	5.12756		.85	5.14039	
.90	5.11460		.40	5.12782		.90	5.14064	
.95	5.11487		.45	5.12808		.95	5.14090	
81.00	5.11513		.50	5.12834		86.00	5.14115	
.05	5.11540		.55	5.12860		.05	5.14140	
.10	5.11567		.60	5.12886		.10	5.14165	
.15	5.11594		.65	5.12912		.15	5.14191	
.20	5.11621		.70	5.12937		.20	5.14216	
.25	5.11647		.75	5.12963		.25	5.14241	
.30	5.11674		.80	5.12989		.30	5.14266	
.35	5.11701		.85	5.13015		.35	5.14291	
.40	5.11727		.90	5.13041		.40	5.14316	
.45	5.11754		.95	5.13067		.45	5.14341	

TABLE 30.—For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.	Miles.	Log. meters.	Diff. log. .01 mile.
86.50	5.14367	5	89.00	5.15604	5	91.50	5.16807	5
.55	5.14392		.05	5.15628		.55	5.16831	
.60	5.14417		.10	5.15653		.60	5.16855	
.65	5.14442		.15	5.15677		.65	5.16878	
.70	5.14467		.20	5.15701		.70	5.16902	
.75	5.14492		.25	5.15726		.75	5.16926	
.80	5.14517		.30	5.15750		.80	5.16949	
.85	5.14542		.35	5.15775		.85	5.16973	
.90	5.14567		.40	5.15799		.90	5.16997	
.95	5.14592		.45	5.15823		.95	5.17020	
87.00	5.14617		.50	5.15847		92.00	5.17044	
.05	5.14642		.55	5.15872		.05	5.17067	
.10	5.14667		.60	5.15896		.10	5.17091	
.15	5.14692		.65	5.15920		.15	5.17115	
.20	5.14717		.70	5.15944		.20	5.17138	
.25	5.14741		.75	5.15968		.25	5.17162	
.30	5.14766		.80	5.15993		.30	5.17285	
.35	5.14791		.85	5.16017		.35	5.17209	
.40	5.14816		.90	5.16041		.40	5.17232	
.45	5.14841		.95	5.16065		.45	5.17256	
.50	5.14866		90.00	5.16089		.50	5.17279	
.55	5.14891		.05	5.16113		.55	5.17303	
.60	5.14915		.10	5.16137		.60	5.17326	
.65	5.14940		.15	5.16162		.65	5.17349	
.70	5.14965		.20	5.16186		.70	5.17373	
.75	5.14990		.25	5.16210		.75	5.17396	
.80	5.15014		.30	5.16234		.80	5.17420	
.85	5.15039		.35	5.16258		.85	5.17443	
.90	5.15064		.40	5.16282		.90	5.17467	
.95	5.15089		.45	5.16306		.95	5.17490	
88.00	5.15113		.50	5.16330		93.00	5.17513	
.05	5.15138		.55	5.16354		.05	5.17537	
.10	5.15163		.60	5.16378		.10	5.17560	
.15	5.15187		.65	5.16402		.15	5.17583	
.20	5.15212		.70	5.16426		.20	5.17607	
.25	5.15237		.75	5.16450		.25	5.17630	
.30	5.15261		.80	5.16474		.30	5.17653	
.35	5.15286		.85	5.16497		.35	5.17676	
.40	5.15310		.90	5.16521		.40	5.17700	
.45	5.15335		.95	5.16545		.45	5.17723	
.50	5.15359		91.00	5.16569		.50	5.17746	
.55	5.15384		.05	5.16593		.55	5.17769	
.60	5.15408		.10	5.16617		.60	5.17793	
.65	5.15433		.15	5.16641		.65	5.17816	
.70	5.15457		.20	5.16665		.70	5.17839	
.75	5.15482		.25	5.16688		.75	5.17862	
.80	5.15506		.30	5.16712		.80	5.17885	
.85	5.15531		.35	5.16736		.85	5.17908	
.90	5.15555		.40	5.16760		.90	5.17932	
.95	5.15580		.45	5.16783		.95	5.17955	

TABLE 30 —For interconversion of miles and logarithms of meters—Continued.

Miles.	Log. meters.	Diff. log .01 mile.	Miles.	Log. meters.	Diff. log .01 mile.	Miles.	Log. meters.	Diff. log .01 mile.
94.00	5.17978	5	96.00	5.18892	5	98.00	5.19788	4
.05	5.18001		.05	5.18915		.05	5.19810	
.10	5.18024		.10	5.18937		.10	5.19832	
.15	5.18047		.15	5.18960		.15	5.19854	
.20	5.18170		.20	5.18983		.20	5.19876	
.25	5.18193		.25	5.19005		.25	5.19898	
.30	5.18116		.30	5.19028		.30	5.19920	
.35	5.18139		.35	5.19050		.35	5.19942	
.40	5.18162		.40	5.19073		.40	5.19965	
.45	5.18185		.45	5.19095		.45	5.19987	
.50	5.18208		.50	5.19118		.50	5.20009	
.55	5.18231		.55	5.19140		.55	5.20031	
.60	5.18254		.60	5.19163		.60	5.20053	
.65	5.18277		.65	5.19185		.65	5.20075	
.70	5.18300		.70	5.19208		.70	5.20097	
.75	5.18323		.75	5.19230		.75	5.20119	
.80	5.18346		.80	5.19253		.80	5.20141	
.85	5.18369		.85	5.19275		.85	5.20163	
.90	5.18392		.90	5.19297		.90	5.20185	
.95	5.18415		.95	5.19320		.95	5.20207	
95.00	5.18437		97.00	5.19342	4	99.00	5.20229	
.05	5.18460		.05	5.19365		.05	5.20250	
.10	5.18483		.10	5.19387		.10	5.20272	
.15	5.18506		.15	5.19409		.15	5.20294	
.20	5.18529		.20	5.19432		.20	5.20316	
.25	5.18551		.25	5.19454		.25	5.20338	
.30	5.18574		.30	5.19476		.30	5.20360	
.35	5.18597		.35	5.19499		.35	5.20382	
.40	5.18620		.40	5.19521		.40	5.20404	
.45	5.18643		.45	5.19543		.45	5.20425	
.50	5.18665		.50	5.19565		.50	5.20447	
.55	5.18688		.55	5.19588		.55	5.20469	
.60	5.18711		.60	5.19610		.60	5.20491	
.65	5.18733		.65	5.19632		.65	5.20513	
.70	5.18756		.70	5.19655		.70	5.20535	
.75	5.18779		.75	5.19677		.75	5.20556	
.80	5.18802		.80	5.19699		.80	5.20578	
.85	5.18824		.85	5.19721		.85	5.20600	
.90	5.18847		.90	5.19743		.90	5.20621	
.95	5.18869		.95	5.19765		.95	5.20643	

CONVENIENT EQUIVALENTS.

- 1 acre = 43,560 square feet = 4,840 square yards
- 1 statute mile = 1,760 yards = 5,280 feet = 63,360 inches.
- 1 cubic foot = 7.48 gallons = 0.804 bushel
- 1 cubic foot of water weighs 62.4 pounds
- 1 wine gallon = 8.34 pounds water
- 1 wine gallon = 231 cubic inches
- 1 avoirdupois pound = 7,000 grains
- 1 troy pound = 5,760 grains

1 meter = 39.37 inches. Log. 1.5951654.  
 1 meter = 3.28083 feet. Log. 0.5159842.  
 1 meter = 1.093611 yards. Log. 0.0388629.  
 1 meter = 0.00062137 mile. Log. 6.7933502.  
 1 kilometer = 3,281 feet = five-eighths mile, nearly.  
 1 cubic meter = 35.314 cubic feet = 1.308 yards.  
 1 liter = 1.0567 quarts.  
 1 gram = 15.43 grains.  
 1 kilogram = 2.2046 avoirdupois pounds.  
 1 tonneau (metric ton) = 2,204.6 pounds.  
 1 cubic meter per minute = 0.5886 second-foot.  
 1 second-foot = 50 California miner's inches.  
 1 second-foot = 40 Arizona miner's inches.  
 1 second-foot = 449 gallons per minute.  
 1 second-foot for one day = 1.9835 acre-feet.  
 1 second-foot for one day = 646,272 United States gallons.  
 1 second-foot = about one acre-inch per hour.  
 1 acre-foot = 325,850 gallons.  
 1,000,000 gallons = 3.07 acre-feet.  
 1,000,000 cubic feet = 22.95 acre-feet.  
 1,000,000 gallons per 24 hours = 1.55 second-foot.  
 1 horse power = 550 foot-pounds per second.  
 1 horse power = 76 kilogrammeters per second.  
 1 horse power = 746 watts.  
 1 horse power = 1 second-foot water falling 8.8 feet.  
 1 second-foot falling 10 feet = 1.135 horse power.  
 1 foot per second = 1.077 kilometers per hour.  
 1 foot per second = 0.68 miles per hour.  
 1 inch = 2.54 centimeters.  
 1 foot = 0.3048 meters.  
 1 yard = 0.9144 meters.  
 1 mile = 1.60935 kilometers.  
 1 square yard = 0.836 square meters.  
 1 acre = 0.4047 hectares.  
 1 square mile = 259 hectares.  
 1 square mile = 2.59 square kilometers.  
 1 cubic foot = 0.0283 cubic meters.  
 1 cubic yard = 0.7646 cubic meters.  
 1 gallon = 3.7854 liters.  
 1 pound = 0.4536 kilograms.

1 atmosphere = about  $\left\{ \begin{array}{l} 15 \text{ pounds per square inch.} \\ 1 \text{ ton per square foot.} \\ 1 \text{ kilo per square centimeter.} \end{array} \right.$

Acceleration of gravity = 32.16 feet per second.

To change miles to inches on map:

Scale 1:125000, 1 mile = 0.50688 inches. Log. = 9.7049052.

Scale 1:90000, 1 mile = 0.70400 inches. Log. = 9.8475727.

Scale 1:62500, 1 mile = 1.01376 inches. Log. = 0.0059352.

Scale 1:45000, 1 mile = 1.40800 inches. Log. = 0.1486027.

To change log. of meters to log. of inches on map:

Scale 1:125000 add 6.4982552.

Scale 1:90000 add 6.6409228.

Scale 1:62500 add 6.7992853.

Scale 1:45000 add 6.9419528.

CONSTANTS.

		Log.
Basis of natural logarithms.....	e = 2.7182818285	0.4342944819
Modulus of Briggs's logarithms.....	m = 0.4342944819	9.6377843113—10
Radius of the circle in seconds.....	r = 206264.8062	5.3144251332
Radius of the circle in minutes.....	r = 3437.74677	3.5362738828
Radius of the circle in degrees.....	r = 57.2957795	1.7581226324
Circumference of the circle in seconds.....	1296000	6.1126050015
Circumference of the circle in minutes.....	21600	4.3344537512
Circumference of the circle in degrees.....	360	2.5563025008
Circumference of the circle for the diameter. =	1	0.0000000000
	= 3.1415926536	0.4971498727

ASTRONOMICAL CONSTANTS (HARKNESS).

Sidereal year = 365.256 357 8 mean solar days.  
Sidereal day = 23<sup>h</sup> 56<sup>m</sup> 4.<sup>s</sup>100 mean solar time.  
Mean solar day = 24<sup>h</sup> 3<sup>m</sup> 56.<sup>s</sup>546 sidereal time.  
Mean distance of the earth from the sun = 92 800 000 miles.

PHYSICAL CONSTANTS.

Velocity of light (Harkness) = 186 337 miles per second = 299 878 km. per second.  
Velocity of sound through dry air = 1090  $\sqrt{1+0.00367\ t^{\circ}\text{C.}}$  feet per second.

LINEAR EXPANSIONS OF PRINCIPAL METALS IN MICRONS PER METRE (OR MILLIONTHS PER UNIT LENGTH).

Name of metal.	Expansion per degree C.	Expansion per degree F.
Aluminum.....	20	11.1
Brass.....	19	10.5
Copper.....	17	9.4
Glass.....	9	5.0
Gold.....	15	8.3
Iron, cast.....	11	6.1
Iron, wrought.....	12	6.7
Lead.....	28	15.5
Nickel-steel.....	0	0.0
Platinum.....	9	5.0
Platinum-iridium.....	8.7	4.8
Silver.....	19	10.5
Steel, hard.....	12	6.7
Steel, soft.....	11	6.1
Tin.....	19	10.5
Zinc.....	29	16.1

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[Bulletin No. 234.]

The publications of the United States Geological Survey consist of (1) Annual Reports, (2) Monographs, (3) Professional Papers, (4) Bulletins, (5) Mineral Resources, (6) Water-Supply and Irrigation Papers, (7) Topographic Atlas of United States—folios and separate sheets thereof, (8) Geologic Atlas of United States—folios thereof. The classes numbered 2, 7, and 8 are sold at cost of publication; the others are distributed free. A circular giving complete lists may be had on application.

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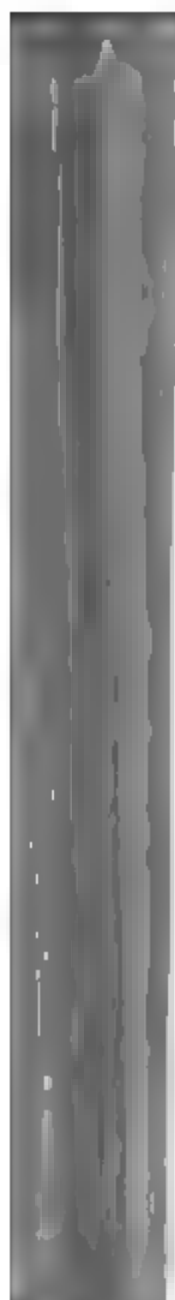
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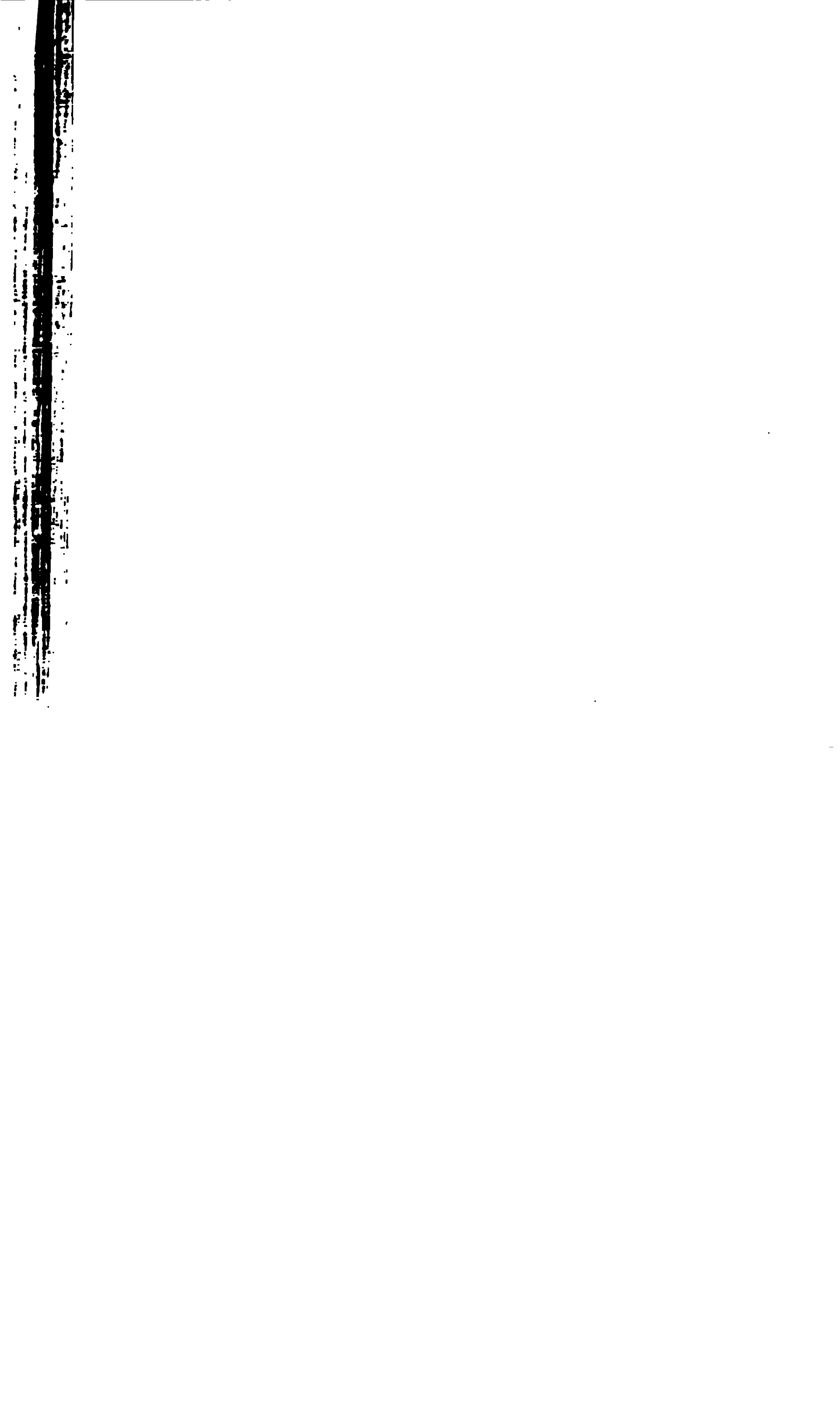
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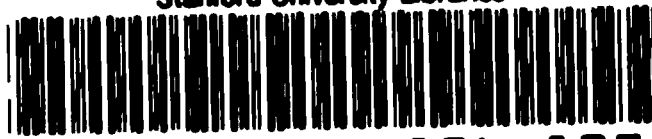




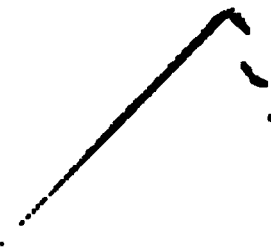




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